The RUBBER AGE

Published TWICE-A-MONTH at New York

Vol. 21 APRIL 10, 1927 No. 1

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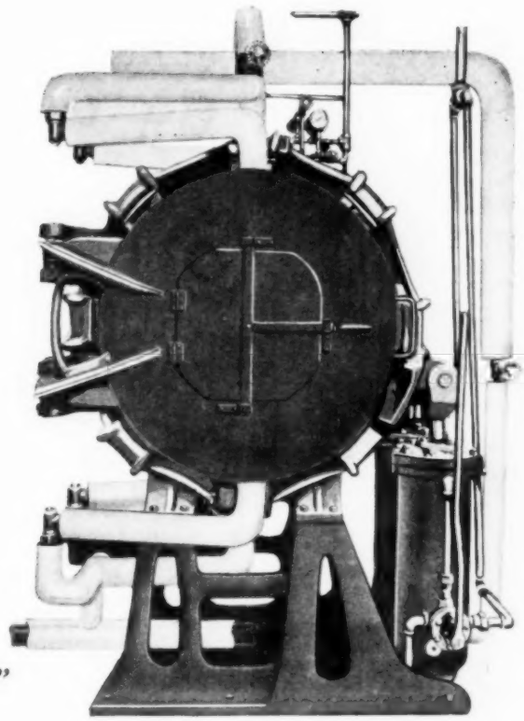

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The
RUBBER AGE
The Only Twice-a-Month Rubber Publication

VOL. 21 NEW YORK, APRIL 10, 1927 NO. 1

C. A. JONES TO MANAGE NEW SEIBERLING UNIT

Ass't General Sales Manager of the Akron Company Takes Two Associates With Him In Assuming New Duties—K & S Plant Has Been Important Unit.

Clifford A. Jones, who has been assistant general sales manager of the Seiberling Rubber Company, Barberton, Ohio, is now vice-president and managing director of the newly organized Seiberling Rubber Company of Canada, Ltd., which on April 1 took over the K & S Rubber Goods Company of Toronto. Mr. Jones has taken with him two of his associates in the Akron Company. They are R. J. Thomas, who becomes secretary-treasurer of the Canadian firm, and W. W. Sanders, who becomes factory manager. In Akron Mr. Thomas was assistant secretary and Mr. Sanders was chief chemist. The former was originally with the old Portage Rubber Company which the Seiberling company succeeded.

The K & S Rubber Goods Company, which Seiberling has taken over as its first foreign unit, has been one of the leading concerns in the rubber industry of Canada for ten years. It ranks fourth in a field of seven Canadian tire manufacturers. It operates five branches and in addition to its large tire volume has enjoyed a $350,000 annual business in drug sundries, supplying 85% of the Canadian drug sundry market. This department will be expanded by Seiberling. The 1926 volume of business is said to have totalled $2,500,000 or 12% of the total Canadian tire business.

Under the new management, Seiberling "All-Tread" tires will be manufactured in Toronto and distributed through the five Canadian branches. In addition; they will be exported to all parts of the British Empire. The Toronto plant has a capacity of 1,000 tires a day. Seiberling plans to double the production immediately. The K & S line of tires will be continued along with the "All Tread" to provide the Canadian dealer market with a type of tire suited to every need.

Managing Director Jones has announced that he expects to make very few changes in the personnel of the Canadian plant.

Heads Goodyear Rubber Co.

F. E. Church

Frank E. Church, manager of footwear sales of the United States Rubber Company, New York, has resigned to become president of the Goodyear Rubber Company, in which he has acquired a controlling interest. He will make his headquarters in New York City. The company's factory is at Middletown, Conn., and sales branches are maintained in several cities.

The Goodyear Rubber Company has affiliated with it the Lambertville Rubber Company of Lambertville, N. J. Both companies manufacture rubber footwear, the former being known for its "Gold Seal" brand and the latter for its "Snag proof". The companies were organized in 1872 and have a history of more than fifty years in rubber footwear manufacturing.

Until 1919 Mr. Church was vice-president and manager of the Northern Shoe Company of Duluth, Minn. He left that city to become manager of the St. Paul branch of the U. S. Rubber Company, and two years later he succeeded to the presidency of the Beacon Falls Rubber Shoe Company, Beacon Falls, Mass. His next advancement was to the position which he has just resigned.

TIRE OUTPUT REDUCED AFTER RECORD SALES

Curtailment Is Only Slight and Reflects Belief that Dealers are Well Stocked—Tire Price Increases and Mergers With Auto Companies Persistently Rumored.

With tire production and shipments in the first three months of this year having run well ahead of the corresponding period of 1926, tire manufacturers have cut their production schedules slightly within the last ten days. The curtailment has not been striking in any case, but it is apparent that less tires are being produced, particularly by the large manufacturers in the Akron district, than was the case a month ago. The slowing up is credited to the belief that the spring dating shipments, which have been of record dimensions, have built up dealers' stocks to a point where smaller production is warranted until spring sales to consumers really get under way.

While tire manufacturers generally concur in the opinion that prices should be increased in the near future, there is no confirmation of the rumor that such a move will be made by the middle of April. From the standpoint of sales the industry is much better off than it was a year ago but present prices are not attractive from the standpoint of reasonable profits. On the strength of the rumors on April 4 that tire prices would be increased, the strength in shares of some of the rubber companies increased materially on the New York Stock Exchange. Goodyear preferred advanced more than 4 points to a new peak price.

Rumors that automobile manufacturers, particularly General Motors, are looking over some of the smaller tire plants with a view to arranging a merger and thereafter controlling their own tire production have persisted but have been indefinite and unconfirmed. The market strength in shares of such companies as Ajax and Kelly-Springfield has been attributed to the possibility that those companies might be the ones figuring in the proposed mergers but only denials or silence have so far greeted the rumors.

LAST RUBBER SURVEY REPORT IS RELEASED

Seventh and Final Publication Resulting From Commerce Department's World-Wide Investigation Deals With Gutta-Percha and Similar Rubber-like Gums.

The Department of Commerce has finally completed its world-wide crude rubber survey, begun under Congressional authority in 1923, with the release of a seventh and last publication entitled "Production of Gutta-Percha, Balata, Chicle and Allied Gums". While this treatise is regarded as one of the minor studies resulting from the survey, it is nevertheless believed to be of importance since the rubber-like gums it covers constitute an important addition to the raw material supply.

This final report was prepared, it is understood, through research and correspondence, particularly with American consuls throughout the world, some of whom are extensively quoted. The author is Joseph W. Vander Laan, special agent, who accompanied D. M. Figart during his investigations in the Middle East. Some of the information on gutta-percha was collected while Mr. Vander Laan was in the East although his major function at the time was to assist Mr. Figart on what proved to be the most noted of the survey reports. Mr. Vander Laan indicates in his introduction that all of the gums discussed in his report are extensively used in the United States and inquiries are frequently made about them, which accounts for their having been considered as coming within the scope of the Department's work on rubber.

Production Only By Natives

Production of gutta-percha, balata, chicle and allied gums such as jelutong, the author indicates, are as yet almost wholly in the hands of natives who secure them from wild forest trees. The possibility of putting them on a cultivated basis is frequently referred to.

Mr. Vander Laan's report is reviewed in some detail on Page 25 of this issue. The greater part of the space in the original report is naturally devoted to gutta-percha and balata since they are of the greatest interest to the rubber industry. Chicle is used in chewing gum manufacture and jelutong is substituted for it to an important degree at the present time.

Taken together, the seven reports of the Department of Commerce crude rubber survey make up no less than 1,400 printed pages. In addition, the Department of Agriculture has issued two independent reports. The seven Department of Commerce publications, prepared as a part of the crude rubber survey, and listed in the order of their appearance, are as follows:

1. *Marketing of Plantation Rubber.*
2. *The Plantation Rubber Industry in the Middle East*
3. *Possibilities for Para Rubber Production in the Philippine Islands.*
4. *Rubber Production in the Amazon Valley.*
5. *Rubber Production in Africa.*
6. *Possibilities for Para Rubber Production in Northern Tropical America.*
7. *Production of Gutta-Percha, Balata, Chicle and Allied Gums.*

The first of these, which, like the last, was a minor report, is now being revised and enlarged and will be re-issued some time during the present year. No further work on the major reports, which cover every part of the tropics, is contemplated.

Copies of all of the reports, with the exception of the one being revised, can be secured from the Superintendent of Documents, Government Printing Office, Washington, D. C., for a few cents per copy.

John Young

COURT APPROVES PLAN FOR N. Y. RUBBER CO.

Plans for the reorganization of the New York Rubber Company, Inc., of Beacon, N. Y., were outlined to Federal Judge John R. Hazel at Buffalo on March 23 and have received his approval on behalf of the creditor interests. Morgan W. Jopling, president of the company, is also president of a new corporation, known as the Montjop Company, which drew up the reorganization plan. It awaits the approval of bondholders of the New York Rubber Co., Inc., most of whom have already indicated their satisfaction with it. It is expected that the company will be operating under the reorganization plan within a few weeks.

It will be remembered that the New York Rubber Company was a subsidiary of the Tucker Rubber Company of Buffalo until February when certain bondholders and Mr. Jopling purchased the assets. There is now no connection between the two companies.

YOUNG AND WISHNICK BUY PIONEER ASPHALT

Well-known National Aniline Executive Resigns to Join with Wishnick Tumpeer, Inc., in Purchase of Pioneer Mineral Rubber Plant in Illinois.

Announcement has just been made that Wishnick-Tumpeer Inc., distributors of rubber chemicals, minerals and colors, and John Young, formerly chief chemist of the Firestone Tire & Rubber Company, and for the last six years with the National Aniline & Chemical Company, had jointly purchased on April 1 the plant of the Pioneer Asphalt Company at Lawrenceville, Ill. It was stated that Mr. Young would become president and general manager of the Pioneer organization and vice-president of Wishnick-Tumpeer Inc. in charge of the rubber division.

The Pioneer Asphalt Company has manufactured the Pioneer brand of mineral rubber for the last twenty years, and is said to be the original manufacturer of this material for use in rubber compounding. In addition to mineral rubber the plant is making roofing, road asphalt, battery compound and other products using asphalt as a base. The company was started about twenty years ago by Sir William McKenzie, well-known railroad builder of Canada who died in 1924. Since that time the management of the company has been in the hands of executors of the estate from whom Wishnick-Tumpeer and John Young purchased control. The plant covers about seven acres in Lawrenceville which is located on the B. & O. Railroad about midway between St. Louis and Cincinnati.

It is planned to operate the factory as heretofore with no extensive changes in personnel but it will be enlarged very shortly so as to make available more space for the manufacture of other chemicals and compounding materials used in the rubber industry. This step takes Wishnick-Tumpeer Inc. out of the selling and distributor class and places it in the manufacturing class.

The chemical laboratory of Wishnick-Tumpeer Inc., which has been located at 43 Summit St., Brooklyn, with J. M. Dawson as chief chemist, has already been dismantled and all equipment has been forwarded to Lawrenceville to be used in enlarging the chemical and physical laboratory at that point. Mr. Dawson will become head of the laboratory at the Pioneer plant which will continue to do experimental research work under the direction of Mr. Young.

It is understood that Mr. Young will spend the greater part of April at Lawrenceville. After the reorganization has been completed Mr. Young will make his headquarters at 251 Front St., New York, in the offices of Wishnick-Tumpeer Inc. It is stated that no other changes in personnel are contemplated in the New York office of the organization.

Rubber Conservation Credited With Saving 72,500 Tons in 1926

Rubber Consumption Statistics for Last Year Convince the Secretary of Commerce that United Effort to Use Less Rubber Was Highly Effective—Tire Prices Now Low.

Broad claims as to the effectiveness of the rubber conservation movement in 1926 are made in a statement which the Department of Commerce released on March 30. The statement is said to represent exactly the views of Secretary of Commerce Herbert Hoover who instigated the conservation campaign and has steadfastly maintained his interest in it.

In Secretary Hoover's opinion the saving in rubber, due to the resistance of American consumers to the high prices caused by British restriction legislation, amounted to no less than 72,500 tons. The chief significance he sees in this saving is the instrument of protection it puts in the hands of consumers of monopolized materials. The complete statement follows:

"Statistical data which are now available on the consumption of raw rubber during 1926 demonstrates that American manufacturers and consumers through voluntary conservation, organized in collaboration with the Department of Commerce, possess satisfactory means of meeting price controls in foreign raw material when an emergency demands such action.

More Cars Running in 1926

"In 1926 those means were so effectively employed that although our car registration was almost 10 per cent greater than in 1925, although we had a record high production of new automobiles, although our gasoline consumption showed almost 15 per cent increase over 1925, and although the number of tires manufactured increased slightly, our net consumption of raw rubber showed very sharp reductions as a result of conservation efforts.

"In 1925 the consumption of raw rubber in the United States amounted to 388,000 tons. With the increased number of automobiles in use during 1926 the consumption at an equal rate with 1925 would have been nearly 426,000 long tons, whereas the actual 1926 consumption was only 366,000 tons. Accordingly, a saving of about 60,000 tons of rubber resulted from the conservation measures employed by manufacturers and users of rubber goods during 1926.

"In addition to this, the stocks of automobile casings held by manufacturers increased by 2,314,000 while inner tube stocks increased by 4,887,000, a further saving equal to 12,500 tons of rubber. Even the combined total saving thus achieved of 72,500 long tons does not represent all that was accomplished since nearly 2,000 more tons of rubber were required in original equipment for new automobiles, the production of which increased in 1926.

"The stocks of rubber on hand in America increased from 51,215 long tons at the beginning of 1926 to 72,520 at the end of the year and stocks in London during the same period increased from 5,697 to 48,921 tons. The total increase in stocks, 64,529 tons, was therefore less than the amount of rubber saved in the United States and but for the conservation measures employed here the rubber situation would at present be no better than during the period of short supplies.

"During both 1925 and 1926 the rubber production was under restriction by the Stevenson Act, spot prices having been forced up to over $1.00 per pound in 1925, but the average of spot prices was reduced to 48.69 cents per pound in 1926 by the conservation measures. Owing to the necessary forward buying of rubber the high price levels of 1925 to some extent carried over on imported rubber into the first half of 1926. The total imports (part of which went into stocks) for the first half of 1926 were 462,834,015 pounds valued at $321,988,-282 or 69.57 cents per pound as against 463,043,697 pounds valued at $183,829,-525 or 39.70 cents per pound for the last half of 1926.

"Tire prices at the beginning of 1925 were at the lowest point in the history of the industry; during that year of rising rubber prices the aggregate wholesale price of four common sizes were raised about 55 per cent to compensate for the increase of about 170 per cent in the price of rubber. Although rubber prices are still about 5 cents per pound higher than in January, 1925, manufacturers have during 1926 reduced wholesale tire prices to below those previous to the great rise. The fall in rubber prices has been passed on by manufacturers to consumers. In dollars an average set of four tires of common sizes cost the dealer $55 before the rise in rubber, $87 in December, 1925, at the height of rubber prices, and about $53 at the present time.

"The degree of restriction in British Malaya and Ceylon continues at 30 per cent below the possible production with the prospect of increase in restriction to 40 per cent below production possibilities. The restricted area produced 64 per cent of the world's rubber in 1922 before restrictions, and produced about 56 per cent in 1926. Whether this further restriction will again raise prices remains to be seen."

PNEUMATIC DEVICE FOR STREET CARS TESTED

The application of the pneumatic tire principle to street car wheels in order to minimize jolts and jars and to make possible the adoption of roller bearings is claimed to have been successful. The tests were recently made in Baltimore by the Hatfield Resilient Wheel Company which had the set of pneumatic street car wheels made for the United Railways & Electric Company of Baltimore. Co-operating with the Hatfield Company were the United States Rubber Company and the SKF Roller Bearing Company.

The principle of the pneumatic street car wheel is to have an inner wheel separated from outer rim by a pair of thick-walled pneumatic tubes. These tubes are of special construction, reinforced with fabric. By means of an equalizer the pressure in the two tubes is kept the same. The walls of the chamber in which the tubes are confined are loose on one side to permit the full cushioning action to reach the inner wheel. It is claimed that the riding qualities of the car are greatly improved and that much of the usual noise is eliminated.

The Hatfield resilient wheel for automobiles, from which the street car wheel is adapted, has a specially designed pneumatic tire separating the hub from the short spokes and rim on which a solid or cushion tire is fitted. The purpose is to secure much greater mileage without sacrifice of comfortable riding.

Seek Rubber Technologists

Several positions as technologists, associate technologists and assistant technologists in the Bureau of Standards, Washington are open to men qualified **in rubber, leather, paper and several other materials. The positions pay $3,800 $3,000 and $2,400 respectively and applications must be on file with the Civil Service Commission in Washington not later than April 19. The duties comprise original investigations, development of processes, physical and chemical testing, development of standards and application of scientific methods to industry.**

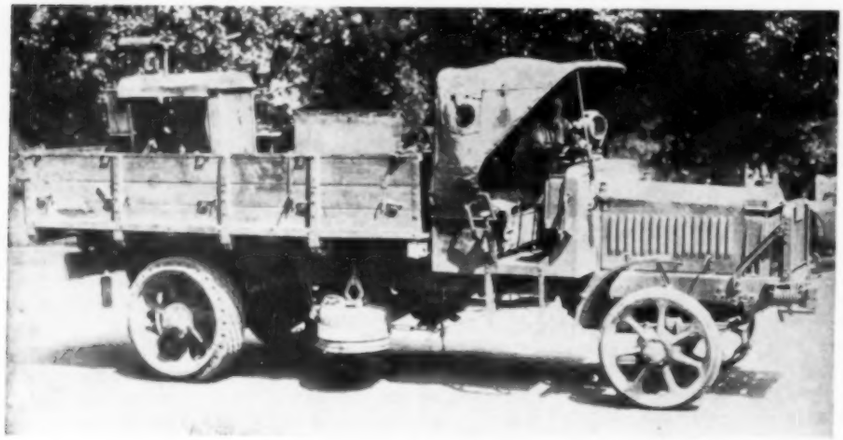
Will Retire Bonds

Dillon, Read and Company, as sinking fund agents, have announced that the Goodyear Tire and Rubber Company will redeem on May 1 a block of $750,000 of its first mortgage twenty-year 8 per cent bonds at 120 and interest to that date. About $22,000,000 of the bonds, which are not due until 1921, are now outstanding. They have recently been quoted at 121 and a fraction.

Declares Fisk Dividends

Quarterly dividends of $1.75 each on the first preferred and first preferred convertible stock were declared by the Fisk Rubber Company on March 31. The dividends are payable May 2 to stock of record April 15.

USE MAGNETS TO REMOVE NAILS ON NEVADA ROADS



Showing How the Magnets are Attached to the Truck Chassis

The Nevada State Highway Department uses two large magnets attached to the chassis of a truck to remove from the roads nails, spikes and other bits of iron that might cause tire punctures. Two 22-inch lifting magnets manufactured by the Electric Controller & Mfg. Co., Cleveland, are suspended between the front and rear wheels of a five-ton truck, at a height of five inches above the surface of the roadway. Current is supplied to the magnets by a five-kilowatt direct current, 115-volt generator which is carried on the truck.

A test run over an old railway grade being used temporarily as a highway between Reno and Lovelock proved the efficiency of the magnets. On this 100-mile section in one round trip 1,370 pounds of nails, spikes and scrap iron were picked up. It was disclosed that on this section there was an average of 45 pieces of sharp-pointed metal for each mile.

The magnets were recently used to clean the streets of Carson City where 4,850 pounds of nails were picked up in two days. It is planned to keep the magnets in continual operation until all Nevada highway routes and unimproved streets in cities on these routes are free from nails.

PRODUCTION OF SULPHUR GAINED 34 P.C. IN 1926

A total of 1,890,057 long tons of sulphur was produced in 1926, a gain of 34 per cent over 1925 production of 1,409,262 long tons, according to the U. S. Bureau of Mines. Shipments during 1926 totaled 2,072,687 tons, valued at approximately $37,300,000, compared to 1925 shipments of 1,858,003, valued at $29,000,000.

Sulphur production in 1926 was second only to 1923 and although 183,000 tons less than shipments, was the highest since the closing of the Union Sulphur mine in Louisiana in 1924. Over 99.9 per cent of the production was by two companies in Texas. The record shipments and the reduced exports indicated a record-breaking domestic consumption for the year.

Howe-Baumann Co. Launched

A new corporation, the Howe-Baumann Company, has been launched at New Haven, Conn., to supercede the Baumann Rubber Company of that city. The manufacture of rubber specialties and toliet requisites will be continued.

The president of the new company is Walter J. Leatherow, who is also an official of the Bakrow-Leatherow Balloon Company of Louisville, Ky. The two companies are understood to be brought into close affiliation by this move. The Louisville company was formed about fifteen months ago when the Howe-Baumann Balloon Company of Newark, N. J. was merged with the Richard Bakrow Balloon Company of Louisville.

The vice-president and secretary of the new Howe-Baumann Company is David A. Lederer of New Haven, and the treasurer is Morris Baumann of the same city. Both of these officials have been with the Baumann Rubber Company.

Rubber Ribs in New Battery

The Prest-O-Lite Co., Inc., battery manufacturers of Indianapolis, has announced a new battery in which a number of strong rubber ribs are vulcanized to the cedar separators. These ribs act as buffers between the wood separators and the metal plates. The thin cedar separators have in the past been the most vulnerable part of a battery, generally giving way before the metal plates. The rubber ribs, three in number, are claimed by Prest-O-Lite to be effective in prolonging the life of the separators until they outlast the metal plates.

New Tread is Popular

Sales of the new All-Weather tread tire which the Goodyear Tire and Rubber Company introduced around the first of the year have already passed the 1,000,000 mark, according to P. W. Litchfield.

EVANS QUITS GOODRICH AND JOINS VANDERBILT

Well-known Chemist, with Goodrich Since 1911, Resigns as Technical Superintendent of Mechanical Goods to Assist Dr. Somerville at R. T. Vanderbilt Co.

W. W. Evans, well-known rubber chemist who has been connected with B. F. Goodrich Company for the past 16 years, resigned on April 1 to join the technical staff of the R. T. Vanderbilt Co., New York, manufacturers and distributors of rubber chemicals and compounding materials. Mr. Evans will make his headquarters in New York where he will assist Dr. A. A. Somerville in connection with the use of Age-Rite antioxidant in the rubber, oil and steel industries.

For the last two years Mr. Evans has been technical superintendent of the mechanical division at the Goodrich plant, previous to which he had been development manager. Mr. Evans was graduated from the University of New Hampshire in 1908 and the University of Toronto in 1911. Shortly after being graduated he went to Goodrich as research chemist and at the time of the consolidation with the Diamond Rubber Co., he became chief chemist of the Philadelphia Rubber Works.

After two years in the reclaiming division, Mr. Evans returned to the Goodrich organization and went to Plant 3, the chemical manufacturing division where he remained until 1917. He was then put in charge of the chemical laboratory at the main plant and in 1919 was made development manager, from which position he became technical superintendent of the mechanical goods department.

Mr. Evans was Chairman of the Rubber Division A.C.S., in 1920; Chairman, Akron Section, A.C.S., 1923; member of the Supervisory Committee on Standard Methods of Analysis, A.C.S., 1924; Chairman of the Mechanical Goods Specification Committee of the Rubber Association, 1924-26. Mr. Evans has in addition contributed a number of papers to the Rubber Division meetings, and a paper on "Accelerated Aging Tests on Rubber Goods", was read by him at the 1922 meeting of the American Society of Testing Materials.

To Build Sole Factory

A rubber sole factory costing $250,000 will be built at Hannibal, Mo., by the International Shoe Company as an addition to their rubber heel plant which is already supplying the company's shoe factories with the thousands of pairs of heels they need. It is now planned to manufacture all the soles the shoe factories use.

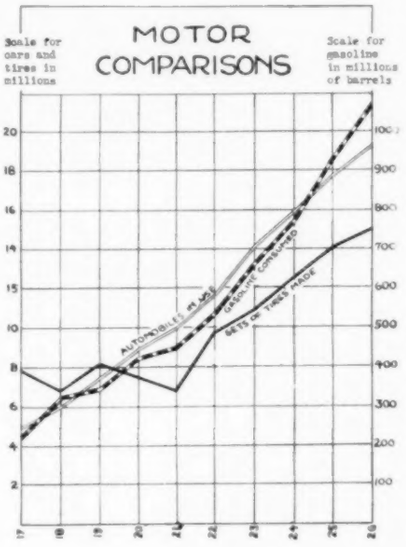
The rubber sole unit will be 112 x 80 feet, three stories high, and conform to the other units of the plant. Work will be rushed in order that the company may be producing its own soles next fall.

Tire Sales Almost Independent of Business Cycles, Says Ayres

Cleveland Economist Finds Tire and Gasoline Business Less Affected by Automobile Production or Changes in Conditions—17,000,000 Cars Running, He Estimates.

The automobile tire business, like the gasoline business, is now almost independent of changes in business cycles, in the opinion of Col. Leonard P. Ayres, vice-president of the Cleveland Trust Company and a nationally known economist. The production and sale of tires and gasoline, he says in his latest statement, goes forward steadily year by year and without much direct relationship to the production of new automobiles. In other words, tire manufacturers and distributors can forget to a considerable extent about automobile production when figuring on a year's business, and there is almost nothing that can get in the way of their enjoying an increasing volume of sales every year.

Col. Ayres points out that most of the automobiles that are in existence are regularly used without much regard to changes in business conditions, and as long as they are being operated they are steadily using up gasoline and tires. To show how this has been true in the past he prepared the chart which is reproduced in the next column.


MOTOR COMPARISONS
Scale for cars and tires in millions
Scale for gasoline in millions of barrels
AUTOMOBILES IN USE
GASOLINE CONSUMED
SETS OF TIRES MADE

Explanation of the Chart

"The three lines in the chart," Col. Ayres says in explanation, "show the number of automobiles in use each year during the last decade, the amounts of gasoline consumed, and the number of sets of pneumatic tires manufactured in the country. The parallelism between the number of cars in use and the consumption of gasoline is close, although there has been in the last two years a more rapid advance in the consumption of gasoline. This advance is probably accounted for by the rapid increase in the number of trucks and buses and motor boats which are all large consumers of gasoline.

"The consumption of tires," he continues, "appears to have been advancing somewhat less rapidly than has the number of cars in use, and this probably reflects the recent notable improvement in the quality of the tires which has given them longer lives and made them last for greater mileages. In the long run, of course, the consumption of gasoline and tires by automobiles will probably adjust themselves so as to move in fairly constant relationship to the number of cars in use."

The public, and perhaps the automotive and rubber industries also, are apt to be misled concerning the number of cars in use, Col. Ayres believes, since registration is too commonly taken as indicating that that many cars are running. In this connection he says:

"On account of publication of the statement that there were more than 22,000,000 cars registered in the United States in 1926, the inference has been commonly drawn that there are that many passenger cars running. Of course, many of the cars registered are trucks, buses and other commercial vehicles, but there are at least two other important reasons why the number of passenger cars in use is actually considerably less than the registration figures would indicate.

Duplicates in Registration

"The first reason is that the registration figures include a great many duplicates but unfortunately it is not possible to state how many of these there are. The other and still more important reason is that the registration figures given out at the end of each year always include the cars that have been used for the last time that year and have been given up as worn out, or have been destroyed in collisions or fires or other accidents.

"Careful computations indicate that the actual number of passenger automobiles in use at the end of 1926 did not greatly exceed 17,000,000. Similar data have been worked out to discover the number of passenger automobiles in use in this country in each year since 1912, and these data form the basis for the diagram mentioned above."

TIRES SURVIVE RECORD SPEED—OVER 200 M.P.H.

Whether or not tires could stand up under the gruelling punishment of 200 m. p.h. speed was conclusively determined by Major H. O. D. Segrave, British racing driver, when on March 29 he drove his 'mystery' car at an average speed of 202.9883 m.p.h. at Daytona Beach, Fla. without any mishap to the tires or any part of the car. That the tires were specially constructed by Dunlop in England for this test in no way detracts from the wonderful performance which they gave.

Ordinary stock tires were never made to withstand the terrific forces generated by driving a car at excessively high speeds and in order to make victory as certain as possible a number of high speed test tires were built by the Dunlop Rubber Co., Ltd. at its plant in Fort Dunlop, England and thoroughly tested out in the laboratory before being given a road test. The tires were tested on a special machine and compared with regular tires as well as track racing tires, and it was found that whereas the regular cord tires threw off their treads at a speed of 100 miles per hour, the specially built high speed tires were quite cool at 200 miles an hour.

That this laboratory test was in itself conclusive was demonstrated when Major Segrave drove his car over the hard beach sand at a speed never before attained by any automobile. Although stock tires never meet the extreme conditions experienced in speed racing, the ability to build tires which stand up under such strains, speaks well for the development in modern tire construction which makes such records possible.

Canadian Goodyear Stock

Stockholders of the Goodyear Tire & Rubber Company of Canada, Ltd., have approved the unification of the company's two preferred issues into a new 7 per cent preferred issue redeemable at $110. The conversion of the common stock from $10 par to no par value was also approved. The company's surplus has been increased by more than $500,000 since last September and now exceeds $3,500,000. The reserve has been increased by $250,000 in the same period. The company's factories are now producing at the highest rate in their history.

New Michelin Warehouse

The Michelin Tire Company, Milltown, N. J., has purchased the land at the corner of Ipswich and Landsdowne Streets, Boston, upon which it intends to build a one-story salesroom and warehouse building. The plot contains 8,456 feet of space, and is located in the automobile district of the city. The Boston offices and salesrooms of the company have been located for sometime at 901 Boylston Street.

PROTEST LOCATION OF NEW RECLAIMING PLANT

Residents of Milford, Mass., are said to be making a strenuous effort to prevent the recently incorporated Askam Rubber Reclaiming Company from beginning the production of reclaimed rubber on the contemplated site in that city. Immediately after its organization, the company began the work of remodeling a building in North Street, Milford, which is next to the factory of the Pruven Composition Products Company. For a number of years this was the site of the Askam Rubber Company which closed down during the war. Nearby residents declare that the reclaiming plant would constitute a nuisance and are endeavoring to compel the company to select another locality. It is not known how the reclaiming company will view the protest of its neighbors.

Sales Class Banquets

Forty members of a graduating class of the Dayton Rubber Manufacturing Company's sales school, Dayton, Ohio, recently celebrated the completion of their work with a banquet at the Engineers Club. F. H. Vermillion, who conducts the school, delivered an address on "Sales Psychology." Raymond Wetzel, his assistant, acted as toastmaster. Members of the class presented Mr. Vermillion with a water set in appreciation of his work on their behalf.

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COMPLETE STUDY OF LABOR PRODUCTIVITY

Output Per Man in Rubber Plants Increased 211 per cent in 1925 over 1914, Says U.S. Department of Labor in Announcing Results of Survey Just Completed.

Labor productivity in rubber factories increased 211 per cent in efficiency in 1925, when compared with the year, 1914, according to a statement issued by the Bureau of Labor Statistics, U. S. Department of Labor.

In its statement making public the results of a survey in the tire industry, it is said that the output per man-hour for the period 1914-1925 increased at a faster rate than in any other industry thus far studied. (The Bureau of Labor Statistics makes these surveys in 11 industries —*Editor.*) The increase in productivity in the rubber tire industry was slightly more than that shown in the automobile industry; that is, the man-hour output in 1925 was approximately three times as great as in 1914.

"Both of these are comparatively new industries," it is said in the statement. "Their period of greatest growth has been in the last 10 years. It is this fact, rather than anything in the character of the industries themselves, which accounts for the unusual rate of increase in output per man-hour, as compared with that in older industries. In the case of rubber tires, for instance, the annual production for 1925 was almost seven times as large as the production in 1914, while the employment only slightly more than doubled, thus resulting in a productivity index of 311, which means an increase over 1914 of 211 per cent.

"The rubber-tire industry ought to be, as far as the nature of the industry itself is concerned, comparatively easy to analyze. There are, it is true, some problems involved in constructing an index of production from output figures for pneumatic tires, truck tires and inner tubes, but the predominance of pneumatic tires is so great as to minimize any mistakes of judgment that might be made in uniting these three products under the one production index."

Reclaimed Rubber Sales

William Welch, vice-president and sales manager of the Akron Reclaiming Company, Akron, Ohio, has announced that gross sales of his company in 1926 exceeded $1,000,000. He anticipates a constantly increasing business for his company and for the industry generally in view of the way in which reclaimed rubber has proven its merits in the last two years.

CATALPO!

RUBBER CHEMISTS HOLD MEETING IN RICHMOND

Ten Papers to be Read by Leading Chemists at Meeting of Rubber Division on April 13-14 in Richmond, Va.: Two Committee Reports to be Discussed.

The seventy-third meeting of the American Chemical Society will be held in Richmond, Va. during the week of April 11. This meeting is the semi-annual gathering of the society, the last annual meeting having been held in Philadelphia in September, 1926. As usual, the Rubber Division of the Society will hold its meetings during the same week, the actual dates set for presenting the rubber papers being Wednesday and Thursday, April 13 and 14, at 2.00 P.M. in the First Presbyterian Annex.

The general headquarters of the Society will be at the Hotel Jefferson, where registration will be opened on Monday morning. A number of the general and business meetings will be held in the auditorium of the hotel, but the divisional meetings are scheduled for other buildings in the immediate vicinity. In addition to the customary Council meeting and general meetings on Monday afternoon and Tuesday morning, members and guests will have the opportunity of visiting a number of points of interest in and around Richmond on Friday and Saturday.

The schedule for the Rubber Division includes, in addition to the two business sessions on Wednesday and Thursday afternoon, a smoker on Thursday night at 8.00 P.M. at the Jefferson Hotel.

Papers to be Read

The papers to be read at this meeting of the Rubber Division are fewer in number than usual, ten being scheduled, but from the character of the subjects to be covered, as disclosed by the abstracts (See page 29, this issue) the rubber chemists in attendance are certain of hearing valuable papers covering a number of important and timely topics. It is planned to present six papers on Wednesday afternoon and the balance on the following day. In addition, on Thursday, a report of the Physical Testing Committee will be heard and the report of the Raw Rubber Specification Committee will be discussed.

The papers to be read are as follows:

1. *Electroplating of Rubber.* By A. Szegvari, assistant to Dr. Paul Klein, B. F. Goodrich Co.
2. *The Conversion of Rubber into Thermoplastic Products with Properties Similar to Gutta Percha, Balata and Shellac.* Part I.—Methods of Preparation and General Properties. By Harry L. Fisher, U. S. Rubber Co.
3. *Ditto.* Part II—Chemistry of the Reaction. By Harry L. Fisher and Eugene M. McColm, formerly B. F. Goodrich Co.
4. *The Determination of the Rubber Hydro-Carbon in Vulcanized Rubbers by the Kemp-Wijs Method.* By Harry L. Fisher and A. E. Gray, formerly B. F. Goodrich Co., now instructor at Lehigh University.
5. *The Chemical Unsaturation of Rubbers Vulcanized with Polynitro Compounds and Benzoyl Peroxide, and Its Possible Bearing on the Nature of Vulcanization.* By Harry L. Fisher and A. E. Gray.
6. *The Effect of Temperature on the Tensile of Reclaimed Rubber.* By Henry F. Palmer, Chief Chemist, Xylos Rubber Co.
7. *Seven Years' Experience with a Mill Room Testing Laboratory.* By R. M. Warner.
8. *The Measurement of the Abrasion Resistance of Rubber and some Relations between Abrasion and Tread Wear.* By Ira Williams, Mellon Institute.
9. *Some Accelerator Characteristics as Revealed by Coefficients of Vulcanization.* By A. F. Hardman and Frank L. White of the Kelly-Springfield Tire Co.
10. *Isolation of Natural Oxidation Inhibitors of Crude Hevea Rubber.* By H. A. Bruson, L. B. Sebrell and W. W. Vogt of the Goodyear Tire & Rubber Co.

PROGRAM

Rubber Division, A. C. S.

MONDAY, April 11

10.00 A.M. — Registration, Jefferson Hotel
7.00 P.M. — Supper Dance, Jefferson Hotel

TUESDAY, April 12

11.00 A.M. — General Meeting, Auditorium, Jefferson Hotel
11.30 A.M. — General Business Meeting
3.30 P.M. — Informal Reception, Jefferson Hotel

WEDNESDAY, April 13

2.00 P.M. — Rubber Division Meeting, First Presbyterian Annex. Six papers scheduled to be read. (See abstracts, page 29, this issue).
8.15 P.M. — Public Meeting, Auditorium, Jefferson Hotel

THURSDAY, April 14

2.00 P.M. — Rubber Division Meeting, First Presbyterian Annex. Remaining papers to be read. (See abstracts, page 29, this issue).
8.00 P.M.—Rubber Division Smoker.

Receiver for McKone

Walter G. Rennick of Millersburg, Ohio, has been appointed receiver of the McKone Tire and Rubber Company of that city. The appointment was made by Judge W. N. Crow on March 23. The receivership was asked for by directors of the company to protect the company's business and property. Indebtedness was listed at $170,000 and assets near $180,000. Mr. Rennick will continue to operate the plant.

CENSUS BUREAU ISSUES TIRE FABRIC FIGURES

Biennial Census of Entire Cotton Textile Industry Shows that 189,345,195 lbs. of Tire Fabric, Valued at $105,625,895 were Manufactured in 1925.

Figures just released by the Department of Commerce giving findings in its biennial census of manufactures taken in 1926 show that the cotton textile industry manufactured 189,345,195 lbs. of various kinds of tire fabrics in 1925, which were valued at $105,625,895. These figures compared with 163,686,944 lbs., valued at $106,079,633, manufactured in 1923.

The quantity of tire duck produced in 1926 totaled 32,081,733 lbs., or 40,761,508 square yards, valued at $16,628,610, which compares with 63,858,718 lbs., or 68,258,927 square yards, valued at $42,324,027, manufactured in 1923.

Cords fabrics to the amount of 140,492,454 lbs., or 176,964,466 square yards, valued at $80,478,625, were manufactured in 1925. These figures compare with 60,269,377 lbs., or 100,727,166 square yards, valued at $39,631,780, turned out in 1923.

Production in 1925 of tire fabrics other than duck and cord totaled 16,771,008 lbs., or 24,400,485 square yards, valued at $8,518,659. More fabrics of this type were produced in the previous census year, for in 1923 production amounted to 39,558,849 lbs., or 57,569,014 square yards, valued at $24,123,826.

In 1925 1,366 establishments reported, compared to 1,375 reporting in 1923, but, of course, all of the mills reporting to the Bureau of Census do not manufacture tire fabrics.

TWO NEW WAREHOUSES FOR GOODYEAR BRANCHES

The Goodyear Tire & Rubber Company, Akron, has announced that the warehouse and office facilities of its New Orleans and Philadelphia branches will be improved.

On or about April 15th the Philadelphia branch will be moved from 2551 North Broad Street to 2750 North Broad Street, where it will occupy a three-story building containing 86,000 square feet of space.

A two-story building for Goodyear is under construction in the heart of the automobile district of New Orleans and upon its completion within the next ninety days it will be used for sales offices and storage quarters. It will contain 25,000 square feet of floor space and will cost approximately $75,000.

Polson Tube Distributor

The Polson-McWade Rubber Company, Cleveland, has appointed the Western Auto Supply Company, which has branches in practically all of the far western states, as distributors for their puncture sealing tubes.

COMPOUNDS OF RUBBER AND SULPHUR STUDIED

The Bureau of Standards, Washington, has announced that it is preparing for publication the results of an investigation of the electrical properties and density of compounds of rubber and sulphur. According to the Bureau, the dielectric constant of rubber increases with the proportion of combined sulphur up to 10.5 per cent; at this point it has a maximum value which is about one and one-half times that of crude rubber. The dielectric constant then decreases with increasing sulphur content and passes through a minimum of 19 per cent of sulphur.

Density measures show that a relatively large decrease in volume accompanies the reaction of rubber with sulphur. When molecular volume is plotted against composition, a large and distinct change occurs at 19 per cent of sulphur.

"Tufhide" Term Prohibited

Use of the term "Tufhide" on shoe soles composed of material other than leather has been prohibited by the Federal Trade Commission. The order directly affects M. Samuels & Co., Baltimore, makers of "Newark" shoes. The Commission found the term to be misleading because the purchasing public expects the sole so marked to be of tough leather. It is said that the soles on which it was used were composed chiefly of rubber and carbon black, painted and polished.

The Philadelphia Rubber Works Company

Manufacturer of

RECLAIMED RUBBER

of

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52 Vanderbilt Ave.

AKRON, OHIO PHILADELPHIA, PA.
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RUBBER PLANTATIONS A DRAG, SAYS WILMER

Former President and director Testify In Goodyear Stockholder Action against Dillon, Read & Co. G. M. P. Murphy Admits Receiving Salary of $5,000.

Testimony in the Goodyear Tire & Rubber Company's stockholder action against Dillon, Read & Co., has continued in the rooms of the N. Y. County Lawyers' Association in New York with E. G. Wilmer, former Goodyear president, and G. M.-P. Murphy, a director, on the stand during the past ten days.

After telling of the conditions at the Goodyear plant as he found them upon taking over the presidency, Mr. Wilmer testified to the effect that in his opinion the Goodyear cotton plantations in Arizona and rubber plantation in Sumatra were a drag on the company in that they produced only a very small portion of the company's cotton and rubber needs. In regard to the control of the board of directors by Mr. Dillon, or Dillon, Read & Co., Mr. Wilmer denied emphatically that such was the case but that on the contrary the board was free to use its own judgment in all matters.

Interesting figures on the effect of small price variations of crude rubber on the amount of additional capital needed to finance purchases was disclosed by Mr. Wilmer on March 24th when he stated that Goodyear was using from 40,000,000 to 80,000,000 pounds yearly and that an increase of one cent would make a difference of from $400,000 to $800,000 in cost. Inasmuch as during the period of reorganization the price range of crude rubber varied from 12 cents to $1.21, extreme care was needed to enable the company to carry on.

Mr. Wilmer admitted on examination that when the stockholders were invited to buy Goodyear debentures in 1921 at 99, they were not told that a banking syndicate headed by Dillon, Read & Co., had previously bought the securities at 90. The next witness, Grayson M.-P. Murphy, a director, who admitted receiving a salary of $5,000 as a member of the Finance Committee, defended the part played by Clarence Dillon and Dillon, Read & Co., in the reorganization of the Goodyear Company and in the acquisition and sale of 330,955 shares of Goodyear prior preference stock early in 1923. Mr. Murphy upheld the action of withholding from the merchandise creditors the fact that a dividend on their stock was to be declared by the directors, basing his stand on the fact that no stockholder is entitled to any information of this kind in advance.

CATALPO!

OAK RUBBER CO. HAS MADE 200,000,000 BALLOONS

The Oak Rubber Company, Ravenna, Ohio, the world's largest exclusive toy balloon and balloon novelty manufacturers, will celebrate the eleventh anniversary of the founding of the company on April 17, the date of organization and incorporation having been April 17, 1916. The spirit of the celebration will be soundly based on the fact that although the manufacturing facilities have constantly been expanded, capacity is at the present time taxed to the utmost. The company's products are now being sold throughout the world.

The Oak Rubber Co. Factory at Ravenna, Ohio.

In the eleven years of operation, the Oak Rubber Company has made and sold considerably over two hundred million balloons. The present plant capacity is 300,000 balloons daily. The company has just issued its new spring catalog which shows still more additions to the scores of different sizes and types of balloons which have been offered in the past.

Paul E. Collette and John W. Shira are continuing their active management of the company. Advertising and sales promotion is handled by Thomas M. Gregory of Akron.

SURVEY WILL DETERMINE 1926 USE OF RECLAIMED

In order to provide a reliable figure of the amount of reclaimed rubber used in the United States in 1926 the Rubber Division of the Department of Commerce is making a nation-wide survey. Questionnaires have been sent to every rubber manufacturing company. A figure on reclaimed rubber production will also be developed through questionnaires sent to the reclaimers. An inquiry is also being made as to the extent to which rubber manufacturers are themselves regrinding cured and uncured factory scrap for re-use in new batches of compounded rubber.

It appears certain that the rubber trade will be glad to receive some authentic figures on reclaimed rubber production and use in 1926. A commonly-used estimate is 165,000 tons but it is distrusted by many who feel that a considerably larger tonnage found its way into American rubber goods last year. The results of the survey are expected to be published within a month.

V. A. COSLER SUCCEEDS W. W. EVANS AT GOODRICH

V. A. Cosler, formerly manager of the Mechanical Goods Construction and Compound control of the B. F. Goodrich Company at Akron, Ohio, has succeeded W. W. Evans as Technical Superintendent of the Mechanical Division.

Mr. Cosler came to the Goodrich Company as a chemist in 1917. Since then he has spent two years in the chemical laboratory, one year on a training course for development engineers, two years in hose development work, two years in experimental development, one year as manager of the Mechanical Goods Compound Development, and a year in the position from which he received his appointment as Technical Superintendent of the Mechanical Division.

CATALPO!

NEW USE OF RUBBER IS SHOWN AT TRADE FAIR

At the British Industries Fair in London the Rubber Growers' Association has had on display an entirely new material for use in the manufacture of women's trinkets and toilet articles. The material is made by coating rubber with gold, silver, or platinum by means of an electrical process originally designed for making dental plates. The same process is believed to open up a new field of enterprise in the manufacture of electrical condensers, non-corrosive piping, and iron-shod rubber blocks for paving, the ease of rubber moulding being combined with the advantages of metal facing.

Everywhere in the Fair the influence of color was manifest, and the effects obtained on rubber were remarkably beautiful. The colored crepes exhibited by Ingram & Son, Ltd. were very striking.

Company Found Solvent

The recent attempt to throw the Consumer's Rubber Refining Co., Elizabeth, N. J. into receivership revealed the fact that the firm assets were $223,382 and liabilities, $7,431. As a result, the Court denied the application for the appointment of a receiver. It is stated that the company is now working two shifts to keep up with its orders for washing, refining and milling crude rubber.

FIFTH TIRE DEALERS' SURVEY NOW UNDERWAY

The fifth semi-annual survey of the stocks of tires in the hands of tire dealers is now being made by the Department of Commerce. The first of these surveys, under the supervision of the Rubber Division, was made on April 1, 1925, and they have been continued regularly each six months since that time. Questionnaires were mailed to a list of more than 100,000 tire dealers and thousands of replies have already been received. A preliminary report will be published about April 19 with a final report to follow at the end of the month.

The survey of April 1, 1925, disclosed that the average tire dealer's stock contained 62.2 casings; the comparable figure for April 1, 1926, was 63.9. It is anticipated by the trade that the stocks are at least as heavy this year since manufacturers' shipments on a spring dating basis have been large. The report of the Rubber Division will cover inner tubes and solid and cushion tires as well as casings.

MAXSON TO MANAGE AKRON BALLOON RACE

Herburt W. Maxson, who is associated with the Goodyear Tire & Rubber Co., was named manager of the Akron National Balloon Race at an organization meeting held March 16. Traveling with Pilot Jack Boettner, he finished third in last year's race and participated in the international race at Brussels.

The race will be held this year on May 29 from the Akron-Cleveland speedway. Three Akron balloons have already been entered by the Goodyear company and two newspapers.

Incorporators of the Akron National Balloon Race Association, which was formed to stage the race, are: C. W. Seiberling, president; W. C. Young, vice-president; Herburt W. Maxson, secretary; and W. F. Jones, treasurer.

Textile Co. Earns $237,505

The Goodyear Textile Mills Company of Los Angeles, Cal., a companion company of the Goodyear Tire & Rubber Company of California, earned a net profit of $237,505 during 1926 after all charges, including Federal taxes, had been deducted. The net profit is equivalent to $12.43 a share on the 19,103 shares of preferred stock outstanding. In 1925 the company had a net profit of $230,817 which was equivalent to $12.08 a share on the preferred stock.

Gasoline Consumption

According to the Bureau of Mines, gasoline consumption throughout the United States during the month of February, 1927, was 18,240,000 gallons, representing an increase of 352,000 gallons over January this year, and an increase of 2,426,000 gallons over February, 1926.

U. S. TIRE EXPORTS SET RECORD IN FEBRUARY

A new record for export shipments of automobile tires from the United States was set in February when 219,543 casings were shipped abroad. They were valued at $2,673,210. The February exports broke the record established in January and continued the increasing volume trend which has been evident since the middle of 1926. Exports of all rubber goods in February, according to the Department of Commerce, were valued at $3,336,978 as compared with $3,107,504 in January.

In February there were eight foreign markets that each took more than 10,000 American automobile tires. The first six of these were, in order of the size of their purchases, Argentina, United Kingdom, Cuba, Brazil, Mexico and Australia. These six markets took just about half of all the casings exported.

S. D. Kerr Succeeds Young

Following closely upon the resignation of John Young, the National Aniline and Chemical Company, New York, have announced the appointment of S. D. Kerr as manager of their intermediates department. Mr. Kerr has been manager of the Pharmaceutical Department for several years and he will in addition manage the rubber division for this company.

BALLOON TIRES USED ON 7,200,000 VEHICLES

1927 Renewal Sales will be Divided Between 30 Per Cent Balloon Tires and 70 Per Cent High Pressures, According to Study Made by Goodyear.

There were about 20,000,000 passenger automobiles and small trucks in the United States on Jan. 1, 1927, according to the Goodyear Tire & Rubber Co. Approximately 7,200,000 of these were equipped with balloon tires, and about 12,800,000 were using high pressures. Demand for the current year for replacements is split up between 30 per cent balloon and 70 per cent high pressure tires, according to the company, which sees some change in this division if spare tires for cars yet to be manufactured or sold are included in the total. Total renewal and spare tire business will be divided between about 35 per cent balloon and 65 per cent high pressure.

The Goodyear Company has compiled a table which shows the relative popularity of each size of balloon and high pressure tire. The various high pressure and balloon tire sizes have been arranged in order of their relative importance from a strictly renewal standpoint. Spare tires for new tires were not considered in compiling the following table:

1.	30x3½	Cl.	High Pressure	45.72
2.	29x4.40	SS.	Balloon	13.36
3.	32x4	SS.	High Pressure	5.77
4.	30x3	Cl.	High Pressure	3.79
5.	31x4	SS.	High Pressure	3.41
6.	31x5.25	SS.	Balloon	3.37
7.	30x3½	SS.	High Pressure	3.02
8.	30x5.77	SS.	Balloon	2.27
9.	33x6.00	SS.	Balloon	2.15
10.	33x4	SS.	High Pressure	1.60
11.	30x5.25	SS.	Balloon	1.53
12.	33x4½	SS.	High Pressure	1.45
13.	32x4½	SS.	High Pressure	1.30
14.	29x4.95 31x5.00	SS.	Balloon	1.26
15.	30x5	SS.	High Pressure	.97
16.	32x6.20	SS.	Balloon	.84
17.	31x4.95 32x5.00	SS.	Balloon	.84
18.	33x5	SS.	High Pressure	.83
19.	34x4½	SS.	High Pressure	.75
20.	32x5.77	SS.	Balloon	.52
21.	30x4.75	SS.	Balloon	.45
22.	29x4.75 30x5.00	SS.	Balloon	.43
23.	28x5.25	SS.	Balloon	.36
24.	33x6.75	SS.	Balloon	.32
25.	29x4.75	SS.	Balloon	.31
26.	32x6.00	SS.	Balloon	.25
	Miscellaneous Sizes			3.13

Will Continue Stoughton Plant

H. J. Lucier, general manager of the Panther Rubber Co., Stoughton, Mass., has denied the rumor that the factory at Stoughton is to be shut down. The basis of the rumor was apparently the fact that the company plans to concentrate the manufacture of its Panco products in the Panco plant at Chelsea, Mass. Mr. Lucier says, however, that the output of other goods at Stoughton will increase.

IT PAYS TO MICRONIZE

The BOOT UPPER

ALONG with flexibility and sound ageing properties the modern wearer of quality rubber boots and heavy rubbers demands *Resistance to the Stubbing of Rocks and Bumps; Immunity from the Attack of Oil and Chemicals; and that General Toughness and Endurance which are obtainable only through the Liberal Incorporation in the Upper Compound of*

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The World's Standard Gas Black

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CATALPO!

Financial Items

Rubber and Motors

KEYSTONE FIRM MOVES; SHOWS LOSS FOR 1926

A gross loss of $45,477 on sales and a loss of $123,798 on operations has been reported by the Keystone Tire and Rubber Company for the year 1926. The net loss for the year was $213,682, including a $63,812 loss on rubber contracts.

George A. Dorfman, president of the company, says in his report to the stockholders: "The writer has made every possible effort during the past year to raise new capital for this business, which would have enabled it properly and profitably to function, but regrets to report that the stockholders of the company have failed to support any thought along these lines.

"It therefore becomes necessary to conserve the assets as much as possible, and in order to reduce the general overhead expenses we are giving up the premises we now occupy and are now moving our general offices to 192nd Street and Bailey Avenue, the Bronx, N. Y."

MILLER BALLOON PLANT ABSORBS MCQUATE CO.

The equipment and stock of the McQuate Rubber Company of Marion, Ohio, has been moved to Crestline, Ohio, where the entire business has been taken over by the Miller Balloon Corporation, a newly-organized company.

The Miller Balloon Corporation has not only taken over all the assets and established business of the McQuate Company, but it has also acquired the property of the defunct Highland Rubber Company which at one time operated in Crestline.

The McQuate Company operated in Marion about five years, during which time it built up a nation-wide trade in toy balloons and other rubber novelties.

Norwalk Postpones Meeting

A special meeting of the Norwalk Tire & Rubber Company scheduled for March 28 and called for the purpose of asking stockholders' approval of the change in the common stock from 150,000 shares of $10 par value to 250,000 shares of no par, was postponed until April 7th. The meeting was also to have considered changing the preferred stock requirements, issuance of 75,000 shares of additional no par common at $5 a share, and other special matters of business.

Needham Succeeds Church

Thomas J. Needham, former manager of branches for the United States Rubber Company, has been appointed general manager of footwear sales of that company, succeeding F. E. Church who resigned to assume the presidency of the Goodyear Rubber Company. Mr. Needham will have working with him Harry J. Haefelein, who has the title of manager of footwear sales. H. A. Derry is the new manager of the heel and sole department. The title of general manager of mechanical rubber goods sales has been given to Walter Gussenhoven.

Ajax Expected to Move

Executive and general offices of the Ajax Rubber Company are to be moved from New York City to Racine, Wis., where one of the company's plants is located, according to plans which are understood to be nearing completion but which are not yet ready for formal announcement. Consolidation of the executive and operating divisions of the company at one plant is expected to result in a considerable saving which will greatly enhance the company's earning power.

Marshall Incorporates

The Marshall Rubber Company has been incorporated at Mount Vernon, Ohio, by T. C. Marshall, former vice-president of Kelly-Sprinfield who is familiarly known in the rubber industry as "Tim" Marshall. The company's authorized stock is reported as 20,000 shares no par common, and $800,000 in preferred. The company will operate the former plant of the Knox Tire & Rubber Co. at Mt. Vernon, the acquisition of which by Mr. Marshall was announced in the last issue of THE RUBBER AGE. Tires and tubes will be manufactured.

Late Stock Prices

	Last Price		1927	
	Apr. 4	Mar. 17	High	Low
Ajax	11	12¾	12¾	9
Firestone	125½	127½	128	117
do 6% pfd.	105½	104	104¼	101½
do 7% pfd.	100¾	100	100¾	98½
Fisk	18	18½	18½	16
do 1st pfd.	86¼	86¾	87¾	81
General	—	145	150	145
do pfd.	—	105	105	99½
Goodrich	55	58½	58¾	42¾
do pfd.	100¾	103	103½	95
Goodyear Com.	45¾	37	45¾	29¼
do pr. pfd.	107¾	107¾	108¾	104¼
do pfd.	111¾	102½	102½	98½
Hood	41	—	47	42½
India	27½	28	30	28
Intercontinental	13	14¾	15¾	11½
Kelly Springfield	18¾	18¾	20¾	9½
do 1st pfd.	60	65	67	44
do 8% pfd.	67	65	67½	35
Lee	7¾	8½	9	7
Miller	35½	35	36¾	32
do pfd.	102¾	—	104	100
Mohawk	15	15	25	15
do pfd.	60	65	65	65
Seiberling	22¾	24	24	21¾
do pfd.	98½	100	100	96
Star	4	—	5	4
U. S. Rubber	61½	64¾	67¼	57⅜
do 1st pfd.	110½	109¾	111¼	107¼
U. S. Rubber Reclaiming	—	—	12	12
do pfd.	—	—	87	87

RECEIVERS WILL SELL BONDS FOR TUCKER CO.

John H. Kelly and E. N. Wilkes, who were appointed receivers a few weeks ago for the Tucker Rubber Corporation of Buffalo, N. Y., have been authorized by Federal Judge John R. Hazel to sell $15,000 worth of bonds to provide funds for the current operation and administration of the company. The bonds are to bear interest at the rate of 6 per cent and will be a prior lien against the assets of the company.

It is understood that the Tucker corporation is not insolvent but that the receivership was made necessary by "frozen" assets. The plea for an equity receivership was made by the Federal Rubber Company, Cudahy, Wis., which had a claim of $35,000. Messrs. Kelly and Wilkes are to make a report to Judge Hazel on April 18 but since the operation of the company is being steadily continued the sale of bonds in the meantime appeared necessary.

REPUBLIC RUBBER CO. BUILDS NEW WAREHOUSE

The plant of the Republic Rubber Company at Youngstown, Ohio, is undergoing further improvements to reduce the handling cost of crude rubber. These improvements include the installation of a mechanical conveyor system and the erection of a new storage warehouse connected with a new compounding room built last year.

This company, which is now a part of the Lee Rubber Corporation, reports that business is satisfactory. The truck tire department is reported as operating at full capacity. Other departments are running at various percentages averaging 85% capacity for the entire plant.

Foreclose Vulcan Rubber

As security for a bond issue in the amount of $500,000, made by the Vulcan Rubber Company of Erie, Pa., a mortgage in this amount was foreclosed against the property of the company by George B. Wingerter, receiver.

According to the papers in the case, the Erie Trust Company, trustee, had been notified by many of the bondholders that the rubber company had defaulted in the payment of interest on the bonds and decision to foreclose by the trustee followed.

Raclare Factory Burns

A fire of unknown origin destroyed the factory of the Raclare Rubber Company in Newark, Ohio, on March 26. The loss is estimated at $15,000.

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News Items About Persons

Eagles on Southern Trip

R. H. Eagles, sales manager of the rubber department of J. M. Huber, Inc., recently left on a trip throughout the South and West to visit the trade as well as the Huber clay and carbon black plants. It is reported that the first shipment of carbon black from the Huber plant at Lance Creek, Wyoming, was made around the middle of March.

Marquette Joins Corduroy

M. A. Marquette, a former plant executive of the Fisk Tire Company of Chicopee Falls, Mass., has been made factory manager of the Corduroy Tire Company, Grand Rapids, Mich. Mr. Marquette has been identified with the automobile tire business for the last 21 years.

* * *

Fred Climer, manager of the labor department of the Goodyear Tire and Rubber Company, has been elected president of the Akron Travelers' Aid Society. He succeeds R. H. Kurtz of the Miller Rubber Company.

* * *

Allen M. Varney, formerly of the Boston Woven Hose & Rubber Co., Cambridge, Mass., has taken charge of the chemical department of the Willoughby plant of the Ohio Rubber Co., Willoughby, Ohio.

* * *

Franz D. Abbott, formerly chief chemist of the Thomas Product Company, Cleveland, is now research physicist of the Firestone Tire & Rubber Co., Akron.

* * *

Russell H. Kurtz, labor personnel director of the Miller Rubber Co., Akron, has been appointed director of the city charity division by Mayor D. C. Rybolt. He has been in the labor and welfare department of the Miller Rubber Co. for 11 years and previously was connected with Goodyear in the same work.

* * *

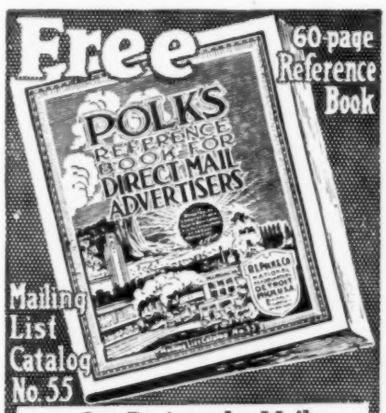
W. S. Wolfe, vice-president and factory manager of the Seiberling Rubber Co., Akron, recently delivered an address on the history of rubber at a meeting of the Kiwanis Club of Barberton, Ohio.

* * *

E. L. Boyenow, of the American Hard Rubber Co., has been transferred from the Butler, N. J. factory to the College Point plant.

* * *

William Reid, president of Schmoll, Stiles and Reid, Inc., crude rubber brokers at 41 Park Row, New York, has accepted the chairmanship of the rubber division for the Salvation Army 1927 Maintenance Appeal.



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Views on Mergers

IT IS NATURAL that in the abstract it should seem reasonable for motor car manufacturers to make their own tires instead of buying them year after year. The number needed annually by the largest automotive manufacturers is large and could well occupy the attention of a special plant. There is always the thought also that the motor car maker already has a distribution system through which he could pass on to the motoring public any surplus that he might have after his original equipment demands had been taken care of.

Such considerations as these have led the public from time to time to put considerable faith in rumors that certain tire manufacturing companies were to be merged with automotive companies. The public likes merger rumors, apparently, as was seen a few weeks ago when the business pages of every paper carried the latest views on consolidations between motor car manufacturers themselves. In the present case, flat denials of the rumors, when they have been attached to any particular concerns, have been unavailing and the rumors have persisted. It may be that eventually there will be some such business moves but there are certainly strong arguments to make them unlikely. These were well summed up in *The Wall Street Journal* when it said in reply to an inquiry the other day:

"Why should the automobile companies make their own tires as long as they can buy them at cost or below? Note the number of tire companies that have been showing deficits. This means they have been selling to the buyer below cost of manufacture. Why should the automobile companies spend millions for new plants to make their own tires? From an economic standpoint an automobile company with a smaller capacity would have a higher cost than a tire company with a much larger production. I can recall when some canning companies built plants to manufacture their own cans. Later they found they could purchase cans far cheaper than they could make them. They had to dismantle the plants and make heavy write-offs against earnings."

The severe competition in the tire industry that has made it possible for the automobile factories to buy their tires at such attractive figures still exists, and will surely continue indefinitely. Production facilities in the tire industry are kept built up to the full absorption capacity of the car industry and the motoring public. There does not seem to be any danger that car makers will have to be less independent with the tire makers in the future than they have been in the past. It is perhaps significant that while some of the large car manufacturers have arranged for independent production of practically every material or part they need, none of them have entered tire manufacturing. Even Mr. Ford, to whom a saving of a few cents on a car calls for immediate action, has left his tire manufacturing to the rubber companies and has merely maintained a small experimental tire "laboratory" to assure himself that the tire manufacturers' prices were as near rock-bottom as they said they were.

More Good Roads

THE SATURATION point in automobile ownership in the United States is certainly closely related to the saturation point in good roads. Expansion in first class highway mileage invites expansion in the number of motor cars which may conveniently and economically be used in this country.

The state of New Jersey, one of the four states having large automobile registrations which has gotten along without a gasoline tax, has now joined the majority in levying that sort of a tax. Imposition of a similar tax in New York State was almost accomplished this year. The tax in New Jersey will mean an increasing extension of the good roads which that state already has and will encourage a still further increase in the number of automobiles.

In his annual report on the condition of the asphalt industry, the general manager of the national trade association of the asphalt pavers declares that the saturation point for street and road paving is nowhere in sight and predicts a steady growth in the industry. There is no reason, he says, to expect any reduction in the billion dollar level of annual expenditures for roads. On the contrary, a moderate increase is predicted.

One hundred and forty million square yards of asphalt pavement were constructed last year, this authority says, and indications are that in 1927 the yardage may reach 150,000,000. The new pavement laid in 1926 would be sufficient for one continuous road eighteen feet wide and 12,560 miles long, or four different highways of the same width crossing the United States from the Atlantic to the Pacific coast.

The soundness of the basis upon which road building rests as an industry is indicated by the fact that automobile license fees, gasoline taxes and Federal aid alone make up a yearly good roads fund of approximately $600,000,000, while bond issues predicated upon motor and gasoline taxes for retirement substantially increase this fund. There is said to be little likelihood of this vast fund being curtailed for years to come. Every additional mile of good highway that is constructed, of asphalt or any other material, means the same expansion for tire sales as it does for automobiles.

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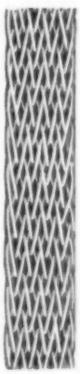

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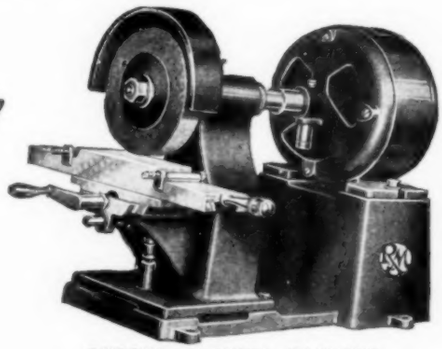

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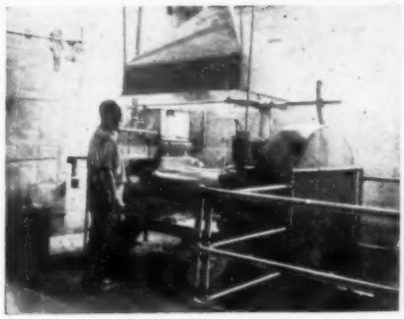
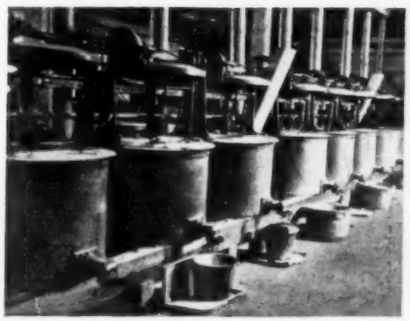
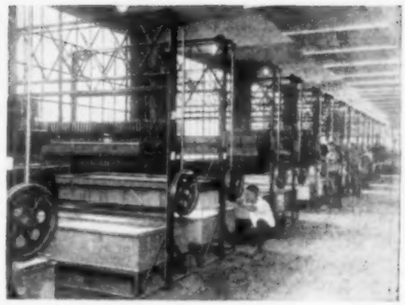






[*Above Illustrations Show the Milling, Mixing and Dipping Operations in a Balloon Plant*]

Manufacture of Toy Balloons By Modern Methods

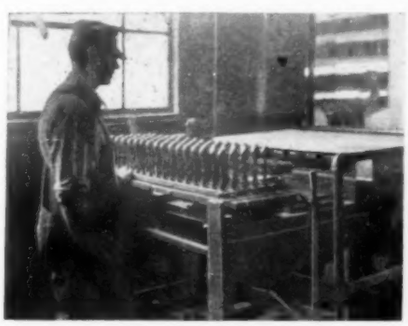
Increase in Use of Toy Rubber Balloons Necessitates the Application of Improved Methods of Manufacture

ALTHOUGH the average life of toy balloons may be brief as compared to many other classes of rubber goods, exacting processes must be followed in manufacturing them in order that the quality may be satisfactory. Similarly, efficiency in factory arrangement and procedure must be achieved to permit the economical production of large quantities.

The first step in toy balloon manufacture is preparing the rubber for the milling machines. While it used to be considered that "wild" Para rubber was the best for dipped goods, it has recently been developed that plantation crepe to a certain extent brings out the colors of balloons much better and, furthermore, gives a certain stiffness which is required, particularly for gas-inflated balloons. Accordingly, recognized practise today is to use on the average about half and half of first quality latex crepe and the best grade of Bolivian Upriver Fine. The ultimate purpose of the balloons determines the proportion in each mix—sometimes the compound will contain 75% Fine and 25% crepe.

The rubber is fed directly to the mill unless the close examination shows it to be not clean enough. As in the manufacture of all dipped goods, cleanliness of the rubber is essential. After the rubber is partially broken down on the mill, the operator begins to feed the coloring pigment. Four pounds of color are used to every 96 pounds of rubber. The color is worked in with great care since it must be completely incorporated with the rubber before the next step is undertaken. This milling practise is the same as in any rubber factory, the operator cutting off thick slabs of the compound and feeding them back in again repeatedly.

When the batch is completely milled, it is cut from the warm rolls of the mill in slabs and put into one of the churn-like mixers or "stirring machines" with sufficient naptha to dissolve it into a heavy cement. The size of the mixers varies. For a few popular colors which are always in large demand 500-gallon mixers are used in large plants. Most of the equipment, however, is in the 100-gallon size. At the factory of the Oak Rubber Company, Ravenna, Ohio, for instance, nine mixers of 100-gallon capacity are used in connection with two 500-gallon mixers. From twelve to fifteen hours are required to mix a batch. At the end of that time the cement is pumped into the appropriate storage tank, according to its color, and is ready for use in the dipping room.



RING ROLLING

Rows of large machines, composed of steel racks built around and above rectangular tanks, make up the equipment of the dipping room. The highly colored cements are pumped into the tanks into which the forms will be lowered mechanically. Hard maple forms of various sizes and shapes are used. The breakage of porcelain forms is far too common to make their use practical in the balloon factory. These forms are mounted on long narrow bases on strips, and a number of these strips make up a "board" of from 80 to 100 forms. About a dozen of these "boards" go on one dipping rack so that a thousand or more balloons are being made at one time.

Great care is necessary in the dipping operation. On the best racks the forms are lowered into the tank of cement by means of a gear driven mechanism, which is of course closely watched by expertly trained employees. The forms must enter the cement very slowly, and raising them up out of the cement is an even more delicate task since lack of care will result in "blisters" being formed on the balloons. Once withdrawn from the cement the coating of rubber on the forms is allowed to dry. When it has thoroughly dried, the forms are again lowered into the cement for a second coating.

The number of dips given a toy balloon depends upon the sort of a balloon that is desired and the thickness of the cement at the time of dipping. From three to five dips are customary.

From the dipping room the balloons on the forms go to the ring rolling department. A little ring or bead on the stem of each balloon is necessary to make inflation convenient. In the early days of balloon manufacture this bead was rolled entirely by hand which was a tedious method productive of sore thumbs and a high labor turnover. Sometimes defective beads were also the result of rapid rolling by hand. Today the rings or beads are made by an ingenious ring rolling machine. This ma-

ENTERING CURING TUNNEL

Upper Left—Soapstone Drying Tunnel.
Left—Removing Balloons from Forms.
Above—Reserve Forms in Storage.
Upper Right—Testing Balloons.
Right—Printing Balloons by Hand.

chine forms the rings by means of revolving brushes. A "board" of forms is pushed into a set of these brushes at just the right angle so that the stems travel between the brushes. One machine rolls the rings on 70,000 balloons daily.

The curing process in toy balloon making is one of immersing the balloons, still on the forms on which they were dipped, in an acid solution and afterward drying in moderate heat. The acid solution is commonly made of carbon bisulphide, tetrachloride, and sulphur chloride. The balloons remain in the curing acid for from 15 to 45 seconds according to their weight. As the "boards" with the balloons on the forms are raised from the acid vat, they are shunted into a heated, and specially ventilated, tunnel-like enclosure through which they travel on roller bearings for a distance of 65 feet. During this trip, requiring 25 minutes, the balloons become thoroughly dry and completely cured. They are then nearly ready to be taken off the forms.

Curing having been finished, the balloons are next given a soapstone bath to prevent sticking. Dry soapstone could be used but is objectionable on account of the dust. The "boards" of balloons, still on the forms, are lowered into a tank of water and soapstone mixture. They are then sent through a short tunnel or drying machine from which they emerge ready for stripping from the forms.

As in ring rolling, brushes are used in removing the balloons from the wooden forms on which they were made. This was originally a hand process also, but in up-to-date factories the special brush machine has been called into play. The revolving brushes simply roll the balloons completely off the forms. As they pop off the forms the rolled-up balloons fly into a chute which starts them on their way to the testing room.

Testing balloons is still a hand process. The inspectors become very deft in handling them. The neck of each balloon is slipped over a compressed air jet. The force of the air quickly unrolls the balloon and inflates it to capacity. With the balloon between the light and herself, the inspector can easily and quickly inspect it for defects. The escape of air at any point is of course apparent at once and the balloon is rejected. Having completed the examination, the inspector releases the neck of the balloon from the air jet and the deflated balloon is ready for packing or printing.

Ornamental balloons, aside from those which are partly dipped in cements of different colors during manufacture, are achieved by printing designs on them. Advertising balloons are made in the same way. The printing process requires each balloon to be again inflated, which constitutes a second test, and an inked form, like a giant rubber stamp, is pressed against it. The balloon is then deflated and allowed to dry. More than one color may be used in decorating the balloons if desired, but great care is required in registering the successive colors. This step finishes the balloons which are now ready for packing and shipping.

In a large balloon factory one is always impressed with the tremendous number of balloon forms required. The balloons are made in a multitude of sizes and shapes—round, airship, and novelty—for each of which separate forms are needed. At the Oak Rubber Company, for instance, the form equipment now numbers around 500,000, of which about three-fifths are in use every day. The reserve forms, always polished and ready for instant use, are available to meet any variations necessary in production. The form equipment constantly grows as new items, requiring different sizes or shapes, are added to the line.

This article has been prepared with the co-operation of The Oak Rubber Company, Ravenna, Ohio, the largest exclusive balloon manufacturers in the world. The processes described accordingly represent the approved practice in this section of the rubber industry and apply to some extent to the manufacture of other dipped goods also. The accompanying photographs were taken in the Oak factory.

SULPHUR
FOR THE RUBBER TRADE

"TIRE" BRAND SUPERFINE Rubber Sulphur
"TUBE" BRAND VELVET Rubber Sulphur

Specify "Tire" and "Tube" Brands on your orders. This will assure you of Stauffer quality and service.

Stauffer Chemical Co.,
Houston Texas
San Francisco, Cal. Chauncey, N. Y.

Smoothness of the surface of a rubber product is noticeable where Factice is used.

RUBBER FACTICE OF HIGHEST QUALITY THE STAMFORD FACTICE STAMFORD CONN THE STAMFORD RUBBER SUPPLY CO

The Stamford Rubber Supply Company
Stamford, Conn.

Gutta-Percha, Balata and Other Rubber-like Gums

Final Report of the Department of Commerce on its Crude Rubber Survey Covers Tropical Products Resembling Rubber

IN ADDITION to supplying the world with around 600,000 tons of crude rubber annually in recent years, tropical countries have also produced an important quantity of gums which resemble rubber in many ways and yet have dissimilar properties which make them very valuable. The most important of these gums are gutta-percha, balata, chicle, jelutong or pontianak, and inferior guttas. Their production is as yet almost wholly in the hands of natives, who secure them from wild forest trees. Since the crudest methods of collection are used, the sources of these materials are constantly narrowing. This consideration, together with the fact that the United States uses important quantities of all of the gums, has led the Department of Commerce to devote a bulletin to their production and use as a last step in the crude rubber survey which it began in 1923.[1]

In spite of the large number of trees killed each year by the native collectors, the Department reports that scientific plantation development has thus far been undertaken only in the case of gutta-percha. The opinion is expressed, however, that eventually plantation production of some of the other rubber-like gums will become necessary. None of them are produced in the United States although tropical America is the principal source for some of them.

Gutta-percha is the generic name commonly applied to several substances originating in the Middle East, one with very superior qualities, which is the true gutta-percha, and the rest known as "inferior guttas." The true high-grade gutta-percha, known on the market as red Macassar and used for very special purposes like cable insulation, forms a small part of the total output of all the gutta-perchas. The tree that furnishes this product is the *Palaquium gutta*. It is indigenous to the forests of Malaya, Sumatra and Borneo. But due to the destructive methods of collecting the latex, which was by making incisions in the bark after the tree had been felled, the original wild sources have been depleted. Today practically all the red Macassar comes from the factory extraction of the latex from leaves on a government-controlled plantation in Java and from some planted and certain wild gutta-percha areas in the Malay Peninsula.

Some forty years ago a systematic study of the trees producing gutta-percha and the methods of propogation was made in Java. It was learned that the most successful method of planting is with seeds at stake. In 1901 the Netherlands India government opened up a large estate at Tjipetir, Java, and between 1901 and 1906 some 2,500 acres were planted to Palaquium. This plantation, the Department of Commerce reports, has been very successful and now comprises over 3,700 acres. Some planting has been done at other places and the total acreage of this tree in the Netherlands East Indies is now estimated at 4,000 acres.

About 1912 the forest department of the Federated Malay States began the planting of gutta-percha in certain of its forest reserves. It is estimated that around 3,000 acres are now planted to gutta-percha in the Malay Peninsula. There is a small acreage in Sarawak also, said to be coming into bearing at the present time.

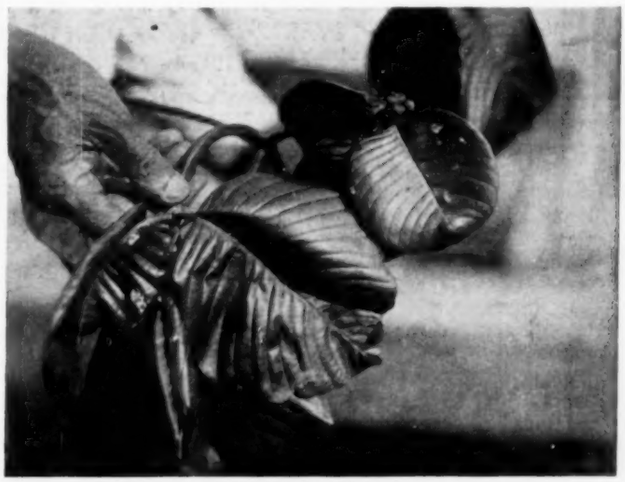
The latest production costs on the Tjipetir gutta-percha plantation available to the Department of Commerce were those of 1920. They showed an estate cost of 17 cents per pound and a total f.o.b. cost of 91 cents per pound. In the last few years the spot New York price of red Macassar has been around $3.00 per pound. The yield per acre at Tjipetir has been increasing from 300 to 400 pounds per year.

Besides the Netherlands East Indies and British Malaya, British Borneo and the Philippine Islands are gutta-percha producers. The total exported from these four territories in 1924 was 2,150 long tons. All of this was called true gutta-percha, as contrasted to the inferior guttas, but as a matter of fact only a small part of it, possibly no more than 5 per cent, was genuine gutta-percha. Northern South America and Africa also produce small quantities.

The exports of admittedly inferior guttas from Malaya and the Netherlands East Indies in 1924 were around 6,000 tons. The world's annual supply of gutta-percha of all grades, therefore, is a little beyond 8,000 tons. It is used chiefly in

[Concluded on Page 28]

[1] "Production of Gutta-Percha, Balata, Chicle and Allied Gums," by Joseph W. Vander Laan, special agent. Trade Promotion Series No. 41.



On the left is seen a Branch from the Balata Tree. On the Right is Shown a sample of the Foliage of the Tree that produces "lirio", the Chicle of Colombia. Samples Collected at Quibdo, Colombia, by J. C. Treadwell; photos by C. Reed Hill.

Controlling Rubber Goods Sales by the Gantt Chart

System of Proven Value Can Easily Be Adapted to the Rubber Industry; Planning in Advance is Essential

By Clifford S. Redfield,
Consulting Engineer, Trenton, New Jersey

IN ORDER for any concern to be successful, plans must be made and executed. The farther ahead these plans can be made, the better the results will be. The great difficulty with many concerns is that they plan only from Monday morning to Saturday noon and repeat the operation from week to week.

Plans form the basis of the budget and the first factor to be considered in the budget is sales. On the planning of the sales rests the whole structure of the remainder of the budget.

Any good sales manager who has had experience in a given line can estimate what the sale of a commodity will be in the various sections of the country. He can tell furthermore what percentage of these total sales his concern should be able to secure. His estimates must, of course, take into consideration various factors such as the business conditions prevailing in the country at the time, stocks in dealers' hands, and the like.

In controlling the sales situation, the usefulness of the Gantt chart is suggested. The Gantt chart will picture the whole sales situation from the beginning of any period to date. Month by month it will show the total sales, sales of specific articles and sales made by individuals, as well as the cumulative total for all of these. It shows at a glance how the actual sales compare with the estimates made by the sales manager. It shows where pressure must be brought to bear, who is doing the work and at what cost, situations that need attention, changes in business conditions over the country, changes in production to be made by increased or decreased sales of specific articles and, last but not least, it shows the cost per dollar of sales for selling the goods.

The Gantt chart is constructed in twelve equal columns, each representing one month. In an additional column at the left the titles of the various headings are shown.

Construction of the Gantt Chart

The chart shown on the facing page is a partial chart drawn up for a corporation manufacturing mechanical rubber goods and tires and having branches located in the various cities of the country.

The figures in the various columns represent the estimated sales, made by the sales manager, in thousands of dollars, the ciphers being omitted. These estimates of the sales manager, are made at the beginning of the year and form the basis of the operating budget.

The light horizontal lines drawn in the various columns show the results of the effort for the monthly period. The heavy horizontal lines show the results of the cumulative effort. The full width of each column represents 100% accomplishment and the length of the line will depend on the percentage of actual results to estimated results. Thus, if it was estimated that sales for the month of February should be $100,000 and the actual sales were only $80,000, the light horizontal line would be extended thru 80% of the space for the month of February. The cumulative line is, of course, simply added on each month, that is, it is the sum of the monthly lines.

The selling cost per dollar of sales is ascertained in the following manner: A definite allowable percentage of gross sales is made, say 10%, for the selling cost. This 10% of the gross sales represents 100% accomplishment for the month, and the actual percentage of this accomplishment is shown on the chart.

As an illustration, the gross sales for the month of April were estimated at $300,000. The estimated or allowable cost of selling this amount of goods would be $30,000. This $30,000 would represent 100% accomplishment. The actual cost was only $20,000. The line for the month of April is therefore drawn two thirds through the space for April. It is better to carry it in this manner than to say that the accomplishment was 150%, in that there was spent only $20,000 when $30,000 was allowed. The reason for this is that the principle involved in the chart is carried out instead of reversing itself.

In the construction of the accompanying chart, the figures are taken at random. No attempt has been made to make the data apply to actual conditions. The figures are merely to illustrate the principle involved.

Explanation of Chart on Next Page

Referring to the chart reproduced herewith, the sales manager estimated the total sales for January at $125,000. The actual sales were $108,800. Therefore the fine horizontal line, showing the accomplishment for the month, extends through 87% of the space for January. In like manner, February sales were $92,000 after being estimated at $100,000, and the line of accomplishment runs through 92% of the February space. In March the sales were $250,000, showing 100% accomplishment; therefore the line of monthly accomplishment for March runs through the whole space. In April the estimated sales were $300,000 and the actual sales were $366,000. This represents 122% accomplishment which is shown by drawing one line through the entire 100% and another line above it for a sufficient distance to indicate 22% additional.

The heavy line representing the cumulative accomplishment is drawn by adding the lengths of the monthly lines of accomplishment.

In similar manner, the allowable cost of sales for January was $12,500. The actual cost was $9,375 which represents 75%. Therefore, the monthly line is drawn thru 75% of the space for January. In like manner the actual expense for February was $8,700 which is 87% of the estimated cost. For March the actual cost was $21,250 which is 85% of the allowable $25,000. For April the actual cost was $47,400 which is 158% of the allowable and necessitates drawing one line through the entire space for April and another line above the first through 58% of the space. In similar manner the actual expense for May was $70,000 representing 140% of the estimate and for June $60,000 actual expense representing 120% of the estimate.

The remainder of the chart is constructed in a similar manner. Each of the individual items shows the monthly accomplishment and the cumulative achievement.

The construction and principle of the chart is a comparatively simple matter. The interpretation of the chart and the action to be taken on the results shown are the important phases.

The large "V" shown at the top of the chart shows the date when the chart was drawn—namely, July 10. The small "s" under February for Mr. P. W. Smith shows that he was out sick. The small "v" under June for Mr. C. A. White shows

[Continued on Second Page Following]

SALES CONTROL. 1927. ✓ GANTT CHART

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SALES. TOTAL	125	100	250	300	500	500	300	250	300	400	300	300
SELLING COST	12.5	10	25	30	40	50	30	25	30	40	30	30
FIRE HOSE	20	10	40	60	90	80	50	40	30	40	40	40
GARDEN HOSE	10	20	100	100	100	100	50	50	10	5	5	5
ETC.												
TIRES. TOTAL	60	90	100	100	200	300	200	100	100	100	100	100
30×3½	50	70	75	75	150	200	150	75	75	75	75	75
29×4.40	5	8	10	10	15	20	25	20	20	20	20	20
35×5	2	2	5	5	8	10	5	2	2	2	2	2
ETC.												
BOSTON BRANCH												
TOTAL SALES	60	40	70	75	90	90	70	40	40	50	40	40
SELLING COST	6	4	7	7.5	9	9	7	4	4	5	4	4
FIRE HOSE	5	2	10	20	10	10	15	10	5	10	10	10
ETC.												
TIRES. TOTAL	20	30	50	50	70	80	50	30	30	30	30	30
30×3½	15	20	35	35	50	60	35	20	20	20	20	20
29×4.40	1	2	3	3	5	8	10	8	8	5	2	2
ETC.												
MR. J.D. JONES	20	15	30	35	45	40	30	20	25	30	20	20
" " " " EXP.	1.4	1.05	2.1	2.45	3.15	2.8	2.1	1.4	1.75	2.1	1.4	1.4
MR. P.W. SMITH	20	10	25	30	30	30	20	10	10	15	10	10
" " " " EXP.	1.4	.7	1.75	2.1	2.1	2.1	1.4	.7	.7	1.05	.7	.7
PHILA. BRANCH												
TOTAL SALES.	25	30	90	90	100	150	100	100	150	150	100	125
SELLING COST	2.5	3	9	9	10	15	10	10	15	15	10	12.5
FIRE HOSE	10	5	20	20	25	20	20	20	20	20	20	20
ETC.												
MR. G.A. BROWN	5	5	20	20	50	60	60	60	60	60	50	40
" " " " EXP.	.35	.35	1.4	1.4	3.5	4.2	4.2	4.2	4.2	4.2	3.5	2.8
MR. C.A. WHITE	15	20	50	50	40	60	30	30	70	70	40	50
" " " " EXP.	1.05	1.4	3.5	3.5	2.8	4.2	2.1	2.1	4.9	4.9	2.8	3.5

Sales Control by the Gantt Chart

(*Continued from page 26*)

he was away on a vacation during that period.

In considering the total sales up to July 1 it will be seen that the sales are about ten days behind. This means that pressure must be brought to bear. The sales for January and for February were fairly satisfactory, while for March and April they were entirely satisfactory. The May and June sales have fallen off. This calls for an investigation. Is it due to a general falling off in business? Is the trouble within the organization? Is the trouble in a particular territory? Is a particular article not moving? In the latter case, is the movement of the product due to poor weather conditions?

In this particular case we can see from the chart that garden hose started off the year with a "bang," but in the last three months the sales have fallen below the estimated volume. This, we will say, is due to a very rainy spring. This calls for some extra effort to move garden hose. From the chart the sections of the country that this extra pressure should be brought to bear will be clearly evident.

The tire sales are not up where they should be. The chart will show what territories are below par and also what sizes are not moving as anticipated. In this particular case the 30x3½ size is not moving. In the Boston territory alone the sales on this particular size are a month behind. Such a condition will demand attention, and the leak can be stopped before it is of such magnitude as to effect the ship. In the case of the 29x4.40 size the demand was clearly underestimated. It would be clearly evident by the first of March that additional equipment must be secured in order to produce enough tires to supply the demand.

The cost of sales was satisfactory for the first three months of the year but in the last three months the cost is exceeding the estimate. This will call for an investigation. Is this due to business conditions in general so that it is more difficult to secure orders and consequently costs more for the orders that are obtained? Or is the difficulty within the organization? The chart will show this condition by reference to the performances of the individuals. Is the cost increase general or only in specific territories? The chart will show this under the various branches.

To sum up: The Gantt chart will show whether the total sales are running up to the estimated standard and whether or not the cost of the sales is in line.

It will show whether the individual items are moving properly. It will show the conditions in the various territories both as to volume and costs and also the volume in the various items offered.

The chart will show clearly the sales made by the individual salesmen and the cost for each man in its relation to set standards of performance.

From the chart it is apparent that the work of Mr. J. D. Jones is above the average, while Mr. P. W. Smith would be considered only fair. The showing of Mr. C. A. White would be considered poor. Mr. G. A. Brown's record would be considered entirely satisfactory.

The chart can be expanded over a wide range to show the performance under almost every conceivable condition. In the space of this limited article it is desired merely to set forth the principles and show their application.

Gutta-Percha and Other Rubber-like Gums

(Continued from Page 25)

cable insulation, as adhesive tissues or tapes, golf ball covers, and in dentistry. Gutta-percha cements and can-sealing compounds are other specialties.

The product commercially known as balata is usually considered a substitute for gutta-percha. It is employed in the manufacture of belting, cable insulation, boot and shoe soles and other articles requiring strength, resiliency, and resistance to the action of water and other elements. Unlike gutta-percha, whose habitat is the East, the balata tree is found principally in the northern part of South America and in Panama. The true balata tree belongs, the Department of Commerce report states, to the genus Mimusops, of the family Sapotaceae, and is classified botanically as *Mimusops globosa* Gaertn.

The extraction of balata latex, known as "bleeding", is done either by felling the tree and tapping, or by tapping the standing tree. Both methods are very destructive. When the trees are tapped on one side only, about half of them die; when tapped on both sides, and of course when felled, destruction is complete. A tree yields from 1 to 3 gallons of latex at a tapping, equal to 4 to 15 pounds of balata. When the trees are felled, as much as 18 pounds of balata may be secured.

The chief balata producing countries are the Guianas, Venezuela and Peru. Colombia, Brazil and Panama produce important quantities also. The total exports from the chief producing countries in 1924 were around 4,500 long tons.

Balata is used chiefly for balata belting which is very popular in Great Britain. In the United States rubber belting is preferred. Balata belting is suitable for use where a waterproof belt is required, but inasmuch as it is not vulcanized, the gum softens under heat and the belt cannot be used where the temperature is above 110° F. Other products made of balata include valves, gaskets and packings for cold water service.

The present method of exploiting balata means that in the course of a very few years the accessible areas will have been denuded of their balata trees. The young trees coming on are tapped before they have reached their full yield. The Department states that no experiments have been made in regard to reseeding the balata or planting it in plantations, so the time required to bring the tree to the producing stage is not known. It is thought 10 to 15 years would be required. No one has been willing to hazard such a long wait for an unknown return and as a result there are no commercial plantations of balata. The market price of the Surinam amber grade has been around 80 cents per pound which is considerably higher than it was a few years ago. It can hardly be anticipated that more inaccessible districts can be opened up rapidly enough to prevent a depletion in the supply.

Chicle is the gum used in chewing gum manufacture. It originally came only from southern Mexico, British Honduras and Guatemala, but certain quantities of somewhat different composition are now received from the Middle Eastern Tropics, Venezuela, the Guianas, Colombia and the Amazon Valley.

Jelutong is an important commodity that is generally compounded with the original chicle and used for the same purposes. It is the product of one or more species of the genus Dyera, family Apocynaceae, that has a geographical distribution in the Middle East corresponding to that of the gutta-percha tree. Jelutong has a rubber content of about 20 per cent. It is said that about 80 per cent of the jelutong reaching the United States is used in chewing gum manufacture.

To summarize, the production of these rubber-like gums have amounted in recent years to about 26,650 tons annually, divided as follows: gutta-percha, 2,150 tons; balata, 4,500 tons; chicle, 6,000 tons; jelutong, 8,000 tons; and inferior guttas, 6,000 tons. A greater plantation effort may be expected in the case of gutta-percha and perhaps chicle. Not enough is known about the cultivation of balata to make any statement. In regard to all of them, the Department of Commerce points out, there is little data concerning cultivation and caution would be necessary in undertaking it. A more immediate method of guaranteeing the future supply of these materials would be a change in the present destructive methods of harvesting.

Abstracts of Papers to Be Read At Richmond Meeting

Many Topics of Wide Interest Will Be Covered in Papers Read By Chemists in Two-Day Session at Richmond, Virginia

Abstracts of the ten papers on various phases of rubber chemistry which will be read before the meetings of the Rubber Division, American Chemical Society, at its semi-annual conference in Richmond, Virginia, on April 13 and 14, are reprinted below. The first six papers are scheduled for the first day of the session, with the remaining four to follow on the second day. According to the final program, they are to be read in the order in which the abstracts are printed here. Opportunity for discussion will be given following each one. Some of the papers will be published in full in this journal after they are formally released by the A.C.S.

ELECTROPLATING OF RUBBER: COLLOIDAL GALVANOPLASTY. Paper by A. Szegvari.

One important early utilization of the movement of colloid particles in the electrical field for galvanoplasty, the 'colloidal galvanoplasty', is the electro-deposition of rubber articles from dispersions. Reasons why rubber dispersions are especially suitable for this purpose are presented.

The physico-chemical conditions during electro-deposition of rubber emulsions deserve special attention. Inside of the baths between the electrodes, the electrochemical, electro-kinetical, and sedimentation phenomena are to be considered. On the electrodes themselves electrical discharge and coagulation of particles are of most importance. The mechanism of building up a layer by electro-deposition is described. Main items for comparison between electroplating from a colloid solution and a molecularly dispersed one; the speed of migration; material moved by unit of current; electrical discharge of ions and colloids at the electrodes; influence of electro-kinetic and capillary forces in both cases; mechanism of layer formation; crystallization in one and coagulation in the other case.

The advantages for industrial applications are various: (1) Low current cost. (2) more automatic, labor-saving production possibilities than hitherto. (3) Great adaptability for various purposes and articles. In addition to the above, certain facts make this process especially adaptable for use in the rubber industry: (1) A suitable raw material already at hand. (2) rubber articles produced by electro-deposition are of inherently higher quality. (3) The elasticity of rubber products makes them especially suitable for depositing on more or less complicated molds and permits easy stripping of the product therefrom.

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THE CONVERSION OF RUBBER INTO THERMOPLASTIC PRODUCTS WITH PROPERTIES SIMILAR TO GUTTA-PERCHA, BALATA AND SHELLAC. Part I: METHODS OF PREPARATION AND GENERAL PROPERTIES. Paper by Harry L. Fisher.

By heating in sheet form a mixture of rubber with approximately 10 per cent of its weight of either an organic sulfonyl chloride or an organic sulfonic acid, for several hours at 125-35° C., it is converted into tough, thermoplastic products resembling gutta percha and hard balata. If heated similarly in bulk there is a pronounced exothermic reaction and the products are hard and thermoplastic like shellac. P-toluene sulfonyl chloride and p-toluene sulfonic acid are suitable reagents. A 7.5 per cent mixture of p-phenol sulfonic acid under similar conditions gives a flexible product similar to gutta percha. It is soluble in benzene, is a very good adhesive and is the basis of the Vulcalock process. Five per cent by weight of concentrated sulfuric acid milled into rubber and heated as above gives balata-types but not the soluble shellac types.

THE CONVERSION OF RUBBER INTO THERMOPLASTIC PRODUCTS WITH PROPERTIES SIMILAR TO GUTTA-PERCHA, BALATA AND SHELLAC. Part II: THE CHEMISTRY OF THE REACTION AND THE PRODUCTS. Paper by Harry L. Fisher and Eugene M. McColm.

The shellac-like products have been studied chiefly. After purification it is found that the chief constituent is a hydrocarbon with the same empiracle formula as that of rubber, C_5H_8, and that it is 55-65 per cent as unsaturated as the rubber hydrocarbon. Addition products of HCl and HBr have been prepared. Vulcanization with sulfur gives a maximum combined sulfur content of about 21 per cent corresponding to 57 per cent unsaturation as compared with rubber. Oxidation, hydrogenation, bromination, nitration, etc., have also been studied. The purified hydrocarbon is white and is completely soluble in the rubber solvents and insoluble in alcohol, acetone, etc. It is much more stable toward heat than rubber. The gutta percha- and balata-types are only partially soluble, but analyses, yields, etc., indicate that they consist of similar isomeric hydrocarbons.

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THE DETERMINATION OF THE RUBBER HYDROCARBON IN VULCANIZED RUBBER BY THE KEMP-WIJS METHOD. Paper by Harry L. Fisher and A. E. Gray.

The dried, acetone-extracted sample, in thin strips, is carefully dissolved in boiling tetrachlorethane or pentachlorethane, and the rubber hydrocarbon determined by means of the Kemp-Wijs method using iodine-chlorine. The combined sulfur is also determined and the corresponding amount of rubber hydrocarbon calculated and added to the above to obtain the total amount. An alternative method is to allow the thin strips to swell in carbon bisulfide and then let the reagent react for 24 hrs. The errors are 0.5-2.0 per cent, depending on the type of vulcanizate. The chemical unsaturation of several different kinds of raw rubbers and of their acetone extracts has been determined and the data included.

• • •

THE CHEMICAL UNSATURATION OF RUBBERS VULCANIZED WITH POLY-NITRO COMPOUNDS AND BENZOYL PEROXIDE, AND ITS POSSIBLE BEARING ON THE NATURE OF VULCANIZATION. Paper by Harry L. Fisher and A. E. Gray.

The results of the Kemp-Wijs method indicate that there is no change in the unsaturation of the hydrocarbon during these vulcanizations. The error in the method may amount to as much as 0.5 per cent, which is equivalent to about 0.13 per cent of oxygen, and therefore does not show completely whether or not a lesser amount of oxygen has been added. It is believed that this work substantiates the theory that sulfur vulcanization is an unknown or undetermined type of change in the hydrocarbon, and that the chemical union with sulfur is a chance secondary reaction. The union of sulfur produces a further change which no doubt gives properties which are very important in the manufacture of rubber goods.

[Abstracts Continued on Next Page]

Abstracts of Rubber Chemists' Papers

(Continued from previous page)

THE EFFECT OF TEMPERATURE ON THE TENSILE OF RECLAIMED RUBBER. Paper by Henry F. Palmer.

The percentage change in the tensile strength of vulcanized reclaimed rubber with variations in the temperature at which the tests are conducted is appreciably greater than in the case of vulcanized new rubber mixtures. It has been shown that the tensile decreases with increasing temperatures for various types of reclaimed rubber. The average variations in tensile tests conducted at 20° and 30°C. amounts to approximately 17-23 per cent (based on a tensile of 50 kgs. per sq. cm. at 20°C.). It is possible to compensate for normal variations in temperature by means of a correction chart.

* * *

SEVEN YEARS' EXPERIENCE WITH A MILL ROOM TESTING LABORATORY. Paper by R. M. Warner.

A great many factory difficulties are caused by improper mixing and errors in compounding. These difficulties may be overcome by establishing a testing laboratory in the mill room where each batch is tested. This paper gives a description of the methods of test necessary together with the results obtained. A new instrument for testing is described.

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THE MEASUREMENT OF THE ABRASION RESISTANCE OF RUBBER AND SOME RELATIONS BETWEEN ABRASION AND TREAD WEAR. Paper by Ira Williams.

Abrasion is the process of wearing away the surface layers by doing work on the surface. The amount of work done depends upon the resistance which the rubber exerts when it is moved against the abrasive. Under the same conditions the resistance offered by two samples of rubber may vary 100 per cent. The usual type of abrasion machine disregards this factor. A machine has been devised which measures the power consumed in abrasion and the results are expressed as volume loss per unit of work done. The relation between abrasion resistance and tire-treadwear is rather complicated and a study of a number of factors including rolling resistance of the tread and tread design would assist in determining the value of a tread-stock.

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SOME ACCELERATOR CHARACTERISTICS AS REVEALED BY COEFFICIENTS OF VULCANIZATION. Paper by A. F. Hardman and Frank L. White.

The rate of sulfur combination in an unaccelerated rubber-sulfur compound during vulcanization has been shown by various investigators to be a straight line function of the time. With accelerated mixes this is usually not the case, and some striking differences in this respect are pointed out in this paper.

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ISOLATION OF NATURAL OXIDATION INHIBITORS OF CRUDE HEVEA RUBBER. Paper by H. A. Bruson, L. B. Sebrell, and W. W. Vogt.

A study has been made of the natural antioxidants present in crude Hevea rubber which are removed by acetone extraction. Two of these substances have been isolated from the unsaponifiable matter of the acetone extracts as high-boiling liquids which occur to the extent of .08 per cent and 0.16 per cent in crude Hevea rubber and which are powerful antioxidants. They possess the formulas $C_{28}H_{42}O_3$ and $C_{28}H_{50}O$ respectively, and appear to be unsaturated liquid sterols. In addition, three more compounds have been isolated from the resin, namely, normal octadecyl alcohol, a $C_{35}H_{24}$ hydrocarbon, and a highly fragrant ketone $C_{15}H_{24}O$. The paper describes the methods of separation, identification, and testing of the above compounds.

Production of Cut Sheet and Slab Rubber

Cut Sheet Has Some Advantages Over Calendered Sheet

BLOCKED RUBBER cut into sheets and slabs is used for many purposes. The lighter weights are generally pure and range in thickness from 5/1000″ to 1/16″. It may be steam or acid cured, or the stock is often sold unvulcanized. For curing in steam the sheets are laid loosely in soapstone or talc, or singly between thin zinc plates. Pure stock is made up into druggists' and surgical articles. A broad heavy cut sheet is used for tobacco pouches and a light one for lining leather and fabric pouches.

Cut sheet is quite different from calendered sheet; it is stronger and will not tear easily as there is no grain. However, the surface is uniformly marked with the knife strokes which leave minute ridges. Especially fine results are obtained by this method in making thick slabs as any quality of compound may be used, and will stand curing in open steam without porosity. Quality of the compound is not of much consequence, whereas in calender-plying a point below firm adhesiveness is impracticable.

Slabs may be used for making up heavy packing, soling, erasive rubber, tiles, polishing wheels and for thick wrapped or molded articles. Cut stock will always have a different texture from calendered or tube mill sheeted stock, and when cured is generally a little softer and more pliable.

In producing cut sheet the rubber is made up into blocks, a cast iron box being used for the purpose. The box should be whitewashed on the inside to keep the rubber from sticking. The sides and ends of the box are hinged to the base and when folded and ready to fill a heavy tie bolt on each end takes the strain. These bolts are removed when emptying the box and the sides and ends drop down allowing the block of rubber to be easily moved from the base to a truck for conveying to the cutter. The lid or plunger is fitted snugly and is raised or lowered by heavy screws, belt driven, or the press may be hydraulic, as about 1,500 pounds to the square inch is desirable for solidity.

Mixed stock is taken directly from a mill in heavy sheets of a size that fit readily into the box. When pure gum is blocked it is only slightly softened by grinding or rubber may be taken hot from a vacuum dryer and blocked without milling. Much grinding is not necessary or desirable as stronger sheet is made if the toughness of the rubber is retained. Pressure may be kept on for twenty-four hours or more, depending on the size of the block and the quality of the compound. Very large blocks require two or three days to set, and after removal from the box, an equal time to thoroughly cool and harden for cutting.

The cutting is done on an ordinary planer bed, belted for about 18″ per minute. An oscillating knife, motor driven, is set at right angles to the bed which is lowered or raised automatically to get any thickness of cut. The cutting blade is three or four inches longer than the width of the block and is about three inches wide. It is hollow ground on one side with a very long bevel. The knife makes 2500 strokes, 2½″ long, per minute. During the cutting the knife must be kept wet by a flow of water; the surface of the stock must also be kept wet so that the sheets which are folded back automatically will not stick when piled up on a convenient table.

Compared to calendering, light sheet cutting by this method is a slow job but for heavy slabs there will not be so much difference in labor cost. Three men will mix, block and cut about a ton of stock per day since one man can operate two cutters. Blocks weighing up to five or six hundred pounds and sixty or seventy inches in length by eighteen inches square are sliced up very rapidly. The work is very accurate and not liable to shrinkage as with some calendered stocks. Stock may be milled to any desired consistency for cutting and soft low quality compounds that would be very difficult to calender are handled without trouble by this method.

RECLAIMED RUBBER

[*A Series of Articles on Its History Development - Manufacture - Uses*]

BY
C. E. Bishop
Consulting Engineer
on Reclaimed Rubber

PART I.

The Problem of Quality and Uniformity

Through Proper Classification, Segregation and Blending Of Scrap, the Reclaimer Could Produce a Better Product

THE HISTORY of the development of chemical and mechanical processes for the reclaiming or rejuvenating of waste or worn-out rubber products is no less interesting than the very romantic and colorful story of the progress made in the manufacturing methods in the production of rubber goods.

However, referring particularly to the highly developed automobile, bus and truck tires of the present day, the reclaimed rubber industry has not kept pace. That this is true is most evident when it is known that in the twenty-seven years which have passed since Marks first obtained a patent on the alkali process, there has been no relatively important improvement in the chemical and mechanical processes of reclaiming rubber.

It is true that many patents have been granted in that period and there has occurred a wonderful development of labor-saving machinery, which, combined with the results of research work in chemicals and oils, has improved the product and reduced the manufacturing cost abnormally. Although the quality has been made more uniform, yet, as stated before, the physical characteristics of reclaimed rubber have not improved in a manner analogous with the highly developed tire compounds.

The major cause for this lagging behind in the improvement of the physical characteristics of reclaimed rubber has been the desire of the reclaimer to reduce costs as much as possible, consistent with the physical quality standards that have been established through competition and which, of course, must be maintained in order to assure permanent, profitable patronage.

However, the fundamental reason why still higher grades of reclaimed rubber are not produced today can be attributed to the way in which reclaimers combine various grades of rubber compounds (as originally combined in the rubber article) and then ignore the reactions which must naturally follow during the chemical and mechanical processes. In effect, they close their eyes while whistling to keep up their courage and are agreeably pleased, but not surprised, to find that they have a good grade of reclaimed rubber as established by precedent.

Nor is this making of a whole tire reclaim, "where tread, sidewall and carcass are amalgamated", the only way in which the reclaimers err. Even more pronounced are the radical changes in the physical qualities and chemical characteristics of reclaims produced from a combination of different makes and different types of tires wherein design and construction has made necessary the use of compounds with ingredients which cause abnormal reactions during processing.

Obviously, we cannot hope to obtain the value of the quality of the better grade of rubber when we have blended with it other and lower grades such as is used in the cheaper constructed tires. Of course this applies also in the blending of other scrap rubber products to be reclaimed. Tires are mentioned as a criterion since they make up a large percentage of the reclaimed rubber today. While we may breed a full-blooded collie dog to a mongrel, we cannot hope to get a high grade collie from such a mating; still, it will be a dog, no doubt, and if the buyer doesn't insist on a pedigree, he will find a home.

At this point mention should be made of the fact that much research work has been done and a great deal more contemplated in the laboratories of the factories of the reclaimed rubber industry. Undoubtedly more money is expended in this activity than is justified by the current selling prices of reclaimed rubber, which, by the way, have been reduced through the keenest of competition, aggravated by the several slumps that have occurred periodically for the past ten or twelve years, until today reclaim is selling for a price relatively lower than its value as compared to crude rubber.

The manufacturer of rubber goods, who buys this reclaim, would undoubtedly be willing to pay more if he could obtain a product of higher quality, and this could be made by the reclaimer if the proper classification, segregation and blending of scrap rubber were intelligently done. Through the better value given and the higher prices obtained, still more money could be spent on research work and testing so as to assure a progressive attitude in the industry with better and higher standards, particularly as to uniformity in physical qualities from day to day.

Proper classification, segregation, and blending will necessitate splitting tires into their respective parts—tread, sidewall, carcass and bead stripping. Where treads and sides are of the same compound, they can, of course, be so classified.

In the last few years scrap rubber jobbers and dealers have become an important factor in this regard. In certain localities to which all, or practically all, of the scrap tires are shipped they have established warehouses ostensibly for the purpose of making an improvement in the quality of material, particularly of scrap tires, sent to the reclaimers. A most natural result followed however, which must be reckoned with seriously if we are to have a material properly classified and segregated.

In the natural course of events while methods of sorting and handling material were being established, it became evident that many repairable tires could be picked out. Later, it became apparent that the carcasses of the "unrepairable" tires could be utilized in the making of blow-out patches and reliners. Furthermore, a ready export market was found for large quantities of the small sizes, 3 in. and 3½ in., for the making of sandals.

These activities on the part of the scrap rubber dealers make available large quantities of tire parts, such as treads and sidewalls (dykes), and carcass scrap remaining after the cutting out of the material used for patches, skivings buffings, etc.

[Concluded on the Next Page]

Ethylene Dichloride As a Rubber Solvent

Valuable Compound Now Available to Rubber Industry—Said To Be Chemically Stable and To Present Low Fire Hazard

IN A RECENT item in THE RUBBER AGE the properties and uses of ethylene dichloride were described as reported by the Mellon Institute. Inasmuch, however, as this solvent has not heretofore been available in large quantities, rubber manufacturers have up to this time not felt the necessity of investigating the advantages claimed for it. It now appears that ethylene dichloride is being produced in commercial quantities at reasonable cost and a resume of its properties, uses and advantages should be of general interest to rubber chemists.

This compound ($C_2H_4Cl_2$) has been variously known as "Dutch liquid," "Elaylchloride," "Ethylene Chloride." "Ethylene dichloride" and also by the more exact term "1,2-Dichlorethane." Of these names, ethylene dichloride is perhaps the most used and is most descriptive of its method of preparation.

According to the findings of the Mellon Institute, ethylene dichloride is a colorless liquid of a pleasant chloroform-like odor, which has the following physical properties: Boiling-point, 83.5° C. at 760 mm.; melting point, -36° C.; density at 20.4° C., 1.2569; specific heat, 0.3054 at 30°C.; latent heat of evaporation, 157.5 B.t.u. per lb. at 0° C.

Ethylene dichloride has high solvent action on oils and fats and many gums, including rubber. Its solvent action is superior to that of the better known extraction agents, and it is extremely stable in the presence of water, alkalies or acids. It may be used in the presence of free chlorine, sulfuryl chloride, sulfur monochloride and other active reagents without being affected. It may be re-used or stored indefinitely, and having a low specified heat, density and latent heat, it may be recovered easily and economically. At ordinary temperatures, it will burn only with difficulty. This tendency is so weak that, when ignited, the draft of combustion will blow out the flame. It has some anaesthetic properties, although its vapors must be inhaled in concentrated form over an extended period to produce an anaesthetic effect. It causes no deleterious heart depression and produces no serious after-effects.

As regards combustibility, ethylene dichloride is not absolutely un-inflammable. It stands at the border line of solvents that will burn and those that are considered fire extinguishers, but a much greater concentration of ethylene dichloride is required in the air to form an explosive mixture than is the case with other solvents such as benzol or gasoline.

The actual data in the case is as follows: The lower explosive limit of benzene in air is 1.41% and gasoline is 1.5%. On the other hand, the lower explosive limit of ethylene dichloride in air is 6.2%. This ratio indicates that ethylene dichloride presents only one-quarter the fire hazard of the other solvents mentioned. Furthermore, ethylene dichloride possesses a characteristic odor somewhat similar to that of trichlor ethylene and its presence in the air would be detected by the sense of smell long before any possibility of its concentration approaching the 6% mark would be possible.

The accompanying chart indicates the vapor pressure of a number of the more common solvents, including ethylene dichloride.

The effect of inhaling the vapor of ethylene dichloride is not dangerous, although, as in the case of any organic solvent, it is to be avoided as far as possible in high concentrations and for extended periods. In earlier days of medicine this substance was in actual use as an anaesthetic, which of itself demonstrates that there need be no serious after-effects from its inhalation, even though carried to the extreme point of loss of consciousness.

To summarize, the characteristics of ethylene dichloride which recommend it for use as a rubber solvent are:

1. It is a pure chemical with constant boiling point.
2. Its density and heat of vaporization are low.
3. Its stability permits indefinite re-use and freedom from chemical action on materials treated.
4. It does not corrode metal.
5. It may be used without danger to workmen.
6. It presents a very low fire hazard.

Quality of Reclaimed Rubber

(Continued from previous page)

This material is sold to the reclaimer who purchases it to balance his raw material inventory which may have gotten out of balance for any one of several reasons.

In operating his preparation department, more dykes may have been produced in an effort to obtain sufficient carcass. Or, due to a desirable change in formula, more dykes may be required than are obtainable without producing an excess amount of carcass and so, in addition to having purchased whole or beadless tires, the reclaimer will buy this material periodically to balance his stock. This is in no sense a handicap to the rubber reclaimer for the dykes of the best of scrap tires so manipulated must eventually come to him anyhow. It does, however, reduce the quantity of carcass rubber available in direct ratio to whatever amount is diverted to reliners and patches and similar commodities.

Obviously then it is necessary for the dealer to know the different grades of tires and how they should be baled together, or after receiving the material the reclaimer must sort it in accordance with the classification code established by his laboratory tests. By testing the various makes and types "using the standard process" and classifying according to their physical qualities within a certain range of variation which has been established by determining the limits from tests made—in that way we will have taken the first step toward producing a higher and more uniform quality of reclaimed rubber.

[*In a later article Mr. Bishop will outline the main lines of attack for the progressive reclaimer who is striving to make the various grades of his reclaimed rubber more uniform in physical quality by developing better machinery and equipment and methods of control.*—EDITOR]

Boiler Explosion Hazards

Garrett Burgess, power engineer of the Tire Division, United States Rubber Company, spoke recently on "Power, Safety and the Human Element" before the Safety Engineers of Detroit. His talk dealt principally with the dangers of steam boilers in reference to the infallibility of the human element.

New types of boiler installations, particularly those using powdered coal as fuel, were described by the speaker. The increase in hazard with this type of fuel is tremendous, he said, and a far greater degree of responsibility is placed with the operator than ever before. One of these installations, now being completed in Detroit, has a time element of only 30 seconds between safe operation and possible explosion. Such types of steam generators, Mr. Burgess pointed out, must of necessity have very skilled and vigilant operators and definite steps are being taken to properly select and train such men.

The speaker laid considerable stress on the importance of educating every man on the job in the dangers attendant to it and the means of coping with dangerous situations.

The London Letter

The GENTLEMAN FROM MINCING LANE will report current opinion in London's famous rubber market in every issue of THE RUBBER AGE

This Week the Gentleman Talks About A Lost Opportunity

LONDON, March 26, 1927

IT IS GENERALLY agreed in London that the New York rubber pool holds considerable of its rubber stock in London. One estimate which I quoted to you a fortnight or so ago was that 15,000 tons were so held. Several people who are shrewd observers expressed their opinion that the Americans who have rubber stocks here—whether pool or other—missed a good chance last week to use them to their advantage. At that time there was a definite, although short-lived, upward movement in raw rubber prices, a trend which was eagerly awaited and expected by everyone watching the rubber market. This movement took place in the face of further steady additions to rubber stocks in London and came just when shipments from the East began to drop off, in other words, just when the first concrete results of theoretical restriction were seen.

If at that moment of general expectancy and uneasiness, the Americans suddenly felt it necessary to shift a large part of their holdings from London to the United States, thereby decreasing the London stocks sharply, the upward movement in the market might have carried on beyond the 20½ pence it did attain to perhaps 23 pence or even more—at least such is the view of the observers referred to. The point in thus maneuvering the London price onto a 23 pence level for the remainder of the current restriction quarter would have been, of course, the prevention of the cut in the exportable percentage to 60% on May 1. If the Americans could accomplish this feat merely by moving their stocks from London to New York, it might appear to be a cheap operation.

However, it is evident that the American buyers are not at all concerned about restriction dropping to 60%: their reliance on "reclaimed" and the stocks in hand is evidently such that expedients of the sort just described do not interest them.

BUT THE failure of the Americans to grasp this opportunity to shove the price onto a higher level for a few weeks constitutes another answer to Mr. Eric Miller's recent charge that "one is almost driven to assume that instead of working for stability they (the American manufacturers) are short sightedly looking to a sharp rise in the price of rubber to stimulate consumer buying, and are not worrying about the more far reaching effects of a cut in exports to 60% on May 1". London has no doubt that the Americans can shove the price up when they wish by moving stocks from London, so wide-spread is the reliance on London rubber stocks as the principal indicator of the world position. Therefore, the big tyre makers could find an excuse for raising tyre prices—if such excuse were desired as Mr. Miller suggests—by jockeying the London price to a higher level in shifting a part of the thousands of tons they own. In other words, by collecting rubber in London or removing it from there they have a certain control over the market picture that they want the public to see.

The London *Evening Standard* has jumped into the rubber arena with a front page article under the heading "Our Rubber Supremacy Being Slowly Surrendered to the Dutch Planter." In proof of his contention the writer of the article says:

"Whereas in 1921 British production was 72% of the world total, in 1926 it was 61% and this year it is estimated to be 52.3%. Dutch production has gone up from 25% in 1921 to 34.6% in 1926, and in 1927 it will be 37.2%". This brings the writer of the article to the statement that "it is now clear that it was the big rise in the American consumption which justified a higher price for rubber. The Stevenson Act has had the effect of limiting the British participation in the new era of prosperity in the rubber industry".

SIR GEORGE MAXWELL, until recently chief secretary to the Federated Malay States government, has responded to this article by writing to the *Financial Times*. He points out that while the reduced percentage which the British colonies hold in the World's rubber trade is a matter of concern, the real test of the proportionate interest—British and Dutch—is in acreage, and he goes on to show that of the total acreage 66.9% is British and 31.1% is Dutch.

Not only are the growers in Malaya confident as to the future of the British rubber growing industry as indicated by Sir George Maxwell's letter, but shares in the London market continue to be held firmly. With the slightest indication of an improvement in raw rubber prices the activities on the following Monday morning in the rubber share section of the Stock Exchange are sure to be considerable. Buying shares at present prices, one is able to realize 7% or 8% on the investment.

The article in the *Evening Standard* stirred up comment from the rubber and tea writer for *The Statist*, a financial paper in London. He reviews the situation to date and comes to the conclusion that "not only does drastic restriction of production (which is not required to save an industry that has just experienced two years of prosperity) take work from the workers, freight from the shippers, produce from the markets and materials from the manufacturers; it also retards the expansion of the plantation industry in the British colonies while promoting it in the Dutch colonies." It gives, moreover, he says, a tremendous incentive to rubber manufacturers to use reclaimed rubber, to find other substitutes, or to discover sources of production not subject to government restriction.

Yours faithfully,

THE GENTLEMAN FROM MINCING LANE.

Rubber Weak on Lack of Buying Support

Ample Stocks in Hands of Manufacturers Coupled with Rumors of Price Cut Tend to Depress Crude Rubber Market

NEW YORK, April 4, 1927—After rallying to 42 cents on March 16 on good consumer demand, crude rubber has since dropped gradually and is now quoted at slightly over 41 cents. Spot and April closing on Saturday was 41⅛ cents. The fluctuation which has characterized the market throughout the past fortnight, was attributed largely to lack of consumer buying, ample supplies in hands of manufacturers and rumors of a price cut in tires.

On a whole the market has been spotty and has reacted on the slightest excuse. An increase in London stock brought the market up one day and on the succeeding day the same condition caused a drop in prices. Under such circumstances closing prices have indicated almost nothing.

Shortly after the middle of March, when ribbed smoked sheets were quoted at 41.80, firmer London cables immediately shot the price up to 42.10. Trading as a result was negligible. On receipt of cables on March 21 to the effect that for the first time since last November London stocks of crude rubber had declined from 61,516 to 61,300 tons, the market was unresponsive and had no effect on prices. The average price for the week in London increased .089d. bringing the average for this quarter to 19.50d. and interest was centered on the possibility of reaching 21d. for the quarter ending with April and thus preventing a further cut of rubber exports.

Continuing lack of buying support during the last week of March caused the market to remain unsettled with a downward tendency, and this condition was by no means helped by losses in London and a rumor of a tire price cut. Akron was said to be slowing up but at that time such a report certainly was not true.

Selling orders on the 24th weakened the market which closed at 40.20 for spot and 40.70 for April but on the next day buying interest brought April up 20 points to 40.90. At the end of the week, on the 27th, exchange prices were up 10 to 80 points but on Monday they again declined 20 to 60 points following publication of the London stock report showing an increase of 1,867 tons to 63,167. London average prices again made only a slight increase to 19.578d. and any possible chance of realizing 21d. practically disappeared.

On April 1 the market was almost unchanged both here and abroad, and on Saturday, April 2, the interest was largely in the size of the London stock decrease, estimates of which ranged from 600 to 1,000 tons.

The actual figures, however, fell far below expectations, amounting only to 533 tons, the total on hand now being 52,634 tons. To-day's exchange closing was at 40.80 for April while 41 cents was bid in the open market for ribbed sheets.

APRIL 2 OPEN MARKET PRICES

Plantations—			
Ribbed Smoked Sheets			
Spot	.41⅛	@	—
April	.41⅛	@	—
May	.41½	@	—
June	.41¾	@	—
July/September	.42½	@	—
October/December	.43⅛	@	—
First Latex, crepe spot	.41¼	@	—
Amber Crepe, No. 2, spot	.39¼	@	—
" " No. 3	.38½	@	—
" " No. 4	.38¼	@	—
Brown Crepe, Rolled	.37⅛	@	—
" " Clean, thin	.38¾	@	—
" " Specky	.37½	@	—
Liquid Latex, per gal.	1.50	@	1.75
Pontianac—			
Bangermassin	Nominal		
Palembang	Nominal		
Prime Pressed	Nominal		
Sarawak	Nominal		
Paras—			
Up-river Fine	.33	@	.33½
" Medium	.29	@	—
" Coarse	.25	@	.25½
Acre Bolivian, fine	.42	@	—
Tapajos, fine	.39	@	—
Cut Beni Bolivian, fine	.45	@	—
Caucho Ball—			
Upper, shipment	.25½	@	.26
Centrals—			
Corinto, scrap	.27	@	—
Esmeraldo, sausage	.25	@	—
Guayule, *washed and dry*	.33	@	—
Africans—			
Benguela, No. 2	Nominal		
Congo, upper, black	Nominal		
" " red	Nominal		
Balata—			
Block, Columbia	.39	@	—
Guayule, *washed and dry*	.33	@	—
" Cublad	.37½	@	—
Surinam, sheet	.72	@	—
Gutta Percha—			
Siak	.24	@	—
Red Macassar	3.00	@	—

LONDON MARKET

Standard Ribbed Smoked Sheets—*Buyers*			
Spot	20	@	20⅛d
April	20	@	20⅛
July/Sept.	20¾	@	20⅞
May	20¼	@	—
Oct./Dec.	21⅜	@	—

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—*Sellers*			
Spot	19⅞	@	— d
April	19⅞	@	—
May/June	20⅜	@	20½
July/Sept.	20⅝	@	20⅞

RECLAIMED RUBBER

NEW YORK, April 4, 1927—Demand for reclaimed rubber has continued very active since our last report with manufacturers steadily increasing their uses of practically all grades of reclaim. Quotations have declined from ¼c. to 1½c. all along the line, the decrease being attributed to improved methods of production as well as to the highly competitive condition of the market. Latest quotations follow:

High Tensile Black			
Super-Reclaim No. 1	lb. .18	@	.18½
" " No. 2	lb. .15½	@	16
Shoe			
Unwashed	lb. .08¼	@	.08⅝
Washed	lb. .11	@	.11½
Tube			
No. 1 (Floating)	lb. .18½	@	.19½
No. 2 (Compounded)	lb. .14½	@	.15½
High Tensile Red	.15	@	.15½
Tires			
Black, washed	.10½	@	.10⅝
Black, unwashed	.08¾	@	.09
Black selected tires	lb. .10	@	.10½
Dark Gray	lb. .12¾	@	.13¼
Dark Gray	lb. .12⅝	@	.13⅛
Light Gray	lb. .13½	@	.14
White	lb. .16½	@	.17
Truck, Heavy Gravity	lb. .08½	@	.09
" Light Gravity	lb. .09	@	.09½
Miscellaneous			
Mechanical Blends	lb. .08	@	.08½
Red	lb. .15	@	.15½

SCRAP RUBBER

NEW YORK, April 4, 1927—Within the past week reclaimers have come into the market to fill up their depleted stocks and as a result scrap has been more active than in some time. Stocks of scrap are low with old accumulations disappearing rapidly. Quotations follow:

[Prices to Consumer]

Auto tire peelings	ton 40.00	@	41.00
Standard White auto	ton 57.50	@	60.00
Mixed auto	ton 28.00	@	29.00
Bicycle tires	ton 26.00	@	27.00
Clean solid truck tires	ton 35.00	@	36.00
Boots and shoes	lb. .01⅞	@	.02
Arctics, trimmed	lb. .01½	@	.01⅝
Arctics, untrimmed	lb. .01⅜	@	.01⅝
Inner tubes, No. 1	lb. .09	@	.09¼
Inner tubes, No. 2, compounded	.07⅛	@	.07¼
Air Brake Hose	ton 38.00	@	40.00
Rubber hose	ton 18.00	@	20.00

Closing Prices on Rubber Exchange of New York, Inc.

MARCH 18 TO APRIL 4

	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	SALES*
Mar. 18	41.10	41.50	41.80	42.10	42.40	42.60	42.90	43.10	43.30	43.50	43.60	43.70	——	140
19	41.50	41.80	42.10	42.50	42.70	42.90	42.00	43.20	43.40	43.60	43.80	44.00	——	38
21	41.30	42.00	42.20	42.40	42.70	42.90	43.00	43.20	43.40	43.60	43.80	44.00	——	151
22	41.20	41.60	41.90	42.10	42.40	42.70	42.70	43.00	43.20	43.40	43.60	43.80	——	40
23	41.20	41.40	41.60	41.80	42.00	42.30	42.60	42.80	43.10	43.30	43.50	43.70	——	159
24	40.20	40.70	41.00	41.10	41.40	41.60	41.80	42.10	42.30	42.50	42.70	42.90	——	352
25	——	40.90	41.20	41.50	41.70	41.80	42.00	42.30	42.50	42.70	43.00	43.20	——	190
26	——	41.60	41.70	42.00	42.30	42.50	42.60	43.10	43.30	43.50	43.70	43.90	——	103
28	——	40.80	41.40	41.60	41.80	42.00	42.10	42.40	42.70	43.10	43.30	43.50	——	90
29	——	40.80	41.40	41.50	41.70	41.90	42.00	42.30	42.50	42.80	43.00	43.20	——	133
30	——	41.00	41.50	41.70	41.80	42.00	42.10	42.30	42.60	43.00	43.20	43.40	——	136
31	——	40.90	41.40	41.70	41.80	42.00	42.30	42.50	42.80	43.20	43.50	43.70	——	141
Apr. 1	——	40.60	41.20	41.50	41.80	42.00	42.20	42.40	42.50	43.10	43.40	43.60	43.80	99
2	——	41.00	41.50	41.80	41.90	42.10	42.30	42.60	42.90	43.50	43.80	44.00	44.20	64
4	——	40.80	41.30	41.40	41.70	41.90	42.10	42.30	42.40	43.00	43.30	43.50	43.70	116

(*) In lots of 2½ tons each; totals are for old and new contracts.
(Prices are for new contracts)

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(All Specifics controlled)

Is all pure, Retort Pine Tar, containing no free water or other foreign matter.

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UNIFORMITY -- RELIABILITY -- CLEANLINESS

March Chemical Market Shows Activity

Increased Production Schedules of Tire Factories Cause Large Stock Withdrawals on Contract for all Kinds of Rubber Compounding Materials.

NEW YORK, April 4, 1927—The enlarged production schedules of tire plants during March called for larger stocks of all classes of rubber chemicals and compounding materials with the result that leading factors in the chemical field reported almost record movement of materials. Early in March this condition was not felt, but as the month advanced and tire plants increased their output the demands for chemicals increased at a lively pace. At this writing it is too early to know whether this speed will be maintained throughout April, but the feeling is expressed in some quarters that April will not come up to March business. This contention, however, is yet to be proven, and we look for a very satisfactory month in every way, though not up to March business.

Prices have been firm with only a few minor changes reported. Accelerators, white fillers, blacks and solvents are at very low levels but are not expected to show any further weakness. Prices follow:

ACCELERATORS

Organic

A-7	lb.	.70 @	—
A-40	lb.	.70 @	—
A-19	lb.	.75 @	—
A-11	lb.	.75 @	—
Aldehyde ammonia, crystals	lb.	.80 @	.82
Aniline oil, drums	lb.	.17 @	.17½
"BB"	lb.	— @	—
Captax	lb.	— @	—
Crylene	lb.	.70 @	—
paste	lb.	.50 @	—
Di-Ortho-Tolylguanidine	lb.	.85 @	.90
Diphenylguanidine	lb.	.68 @	.72
Ethylidene aniline	lb.	.60 @	.65
Excellerex	lb.	.35 @	.40
Formaldehyde Aniline	lb.	.38 @	.42
Grasselerator 102	lb.	.80 @	.82½
Grasselerator 552	lb.	4.80 @	5.00
Grasselerator 808	lb.	1.15 @	1.35
Heptene	lb.	.55 @	—
Hexamethylene-tetramine	lb.	.80 @	.82½
Lithex	lb.	.18 @	.20
Monex	lb.	3.25 @	—
Paraphenylenediamine	lb.	1.25 @	1.30
Piperidine-Piperidyldithio-Carbamate	lb.	4.80 @	5.00
R & H 50	lb.	.60 @	.65
Super-Sulphur No. 1	lb.	— @	—
Super-Sulphur No. 2	lb.	— @	—
Tensilac, No. 41	lb.	.65 @	.68
Thiocarbanilide, kegs	lb.	.26 @	.28½
Trimene	lb.	.75 @	—
base	lb.	1.20 @	1.35
Triphenylguanidine	lb.	.69 @	.73
Tuads	lb.	— @	—
Vulcone	lb.	.70 @	.74
Z. 88	lb.	.75 @	1.00
Zimate	lb.	— @	—

Inorganic

Lead, sublimed blue	lb.	.09 @	.09½
Lead, white	lb.	.09 @	.09½
Litharge, domestic	lb.	.10¼ @	—
Magnesia, calcined, light	lb.	.06½ @	—
heavy	lb.	.04½ @	—

COLORS

Blacks (See Compounding Materials)

Blues

Prussian	lb.	.33 @	.35
Ultramarine	lb.	.08 @	.35

Browns

Siena, Italian	lb.	.04 @	.08
Umber, Turkey	lb.	.04 @	.06

Greens

Chrome, light	lb.	.27 @	.31
medium	lb.	.29 @	.32
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.31 @	.38

Reds

Antimony crimson, 15/17	lb.	.27 @	—
sulphur free	lb.	.48 @	.50
golden 15/17 F.S.	lb.	.16 @	.22
Indian English	lb.	.08 @	.10
Oximony	lb.	.13¼ @	—
Para toner	lb.	.13 @	.14
Red oxide, reduced	lb.	.10 @	.11
pure	lb.	.14 @	.15
Toluidine toner	lb.	1.75 @	1.85
Venetian red	lb.	.02 @	.06
Vermillion, quicksilver, English	lb.	1.55 @	1.65

Whites

Lithopone, Akrolith	lb.	.05¾ @	.06
Lithopone, Azolith	lb.	.05½ @	.05¾
Lithopone, Vanolith	lb.	.10½ @	—
Titanox	lb.	.13 @	.13½
Calc. Base Pigment	lb.	.10½ @	.11
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½ @	.07
ZZ (under 5% leaded	lb.	.06⅝ @	.07⅛
Zinc Oxide—French Process			
White seal	lb.	.11⅞ @	—
Green seal	lb.	.10⅞ @	—
Red seal	lb.	.09⅞ @	—

Yellows

Chrome	lb.	.17 @	.18
Ocher, French medium	lb.	.03 @	.03¼
domestic	lb.	.01¾ @	.02

COMPOUNDING MATERIALS

Aluminum Flake (f.o.b. plant)	ton	21.85 @	24.50
Lydrate light	lb.	.16½ @	.17
Ammonia carbonate	lb.	.13½ @	.14
Are-O-Sel	ton	8.00 @	11.00
Asbestine	ton	14.75 @	18.00
Barium carbonate	ton	50.00 @	52.00
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½ @	—
Blacks			
Arrow "Aerfloted"	lb.	.08 @	.12
Bone Black	lb.	.05½ @	.11
Carbon, compressed	lb.	.07½ @	.11½
" uncompressed	lb.	.07 @	.11
Drop Black	lb.	.06 @	.10
Lamp "	lb.	.12 @	.40
Micronex	lb.	.08 @	.12
Thermatomic carbon	lb.	— @	—
Velvetex carbon	lb.	.04 @	.07
Blanc fixe dry f.o.b. works	lb.	.04 @	—
Carrara filler	lb.	.01¾ @	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	lb.	.02½ @	.04½
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	9.00 @	20.00
Blue Ridge, Dark	ton	— @	—
" " Light	ton	— @	—
Dixie	ton	— @	—
Langford	ton	— @	—
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.20 @	.29
medium white	lb.	.19 @	.25
common bone	lb.	.14 @	.15
Graphite flake, bbls.	lb.	.06½ @	.10
Magnesia, carbonate	lb.	.07 @	.09
Mica, powdered	ton	65.00 @	80.00
Rotten Stone (powdered)	lb.	.02½ @	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	16.00 @	18.00
Terra Alba	cwt.	1.15 @	1.75
Tripoli, white	lb.	.01¾ @	.02
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Quaker	ton	— @	—
Superfine	ton	10.00 @	12.00
Sussex	ton	— @	—
Vansulite	ton	12.50 @	—
Wood pulp XXX	ton	45.00 @	—
" " X	ton	25.00 @	—

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M.R.	ton	— @	—
Hydrocarbon, Hard	ton	— @	—
Hydrocarbon, Soft	ton	— @	—
320/340 M.P. hydrocarbon (c. l. factory)	ton	47.00 @	52.00
300/310 M.P. hydrocarbon (c. l. factory)	ton	42.00 @	47.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	41.00 @	43.00
" —granulated	ton	51.00 @	53.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	34.00 @	80.00

SOFTENERS

Acids

Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulphuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.31½ @	—

Acids, Fatty

Stearex	lb.	.10 @	.14
Stearic, single pressed	lb.	.10 @	.11
double pressed	lb.	.11½ @	.12
triple pressed	lb.	.13½ @	.14

Alkalies

Caustic soda, 76%	cwt.	3.50 @	—
Soda ash, 58% C.L.	cwt.	1.42½ @	1.45

Oils

Castor, No. 3 bbls	lb.	.13¾ @	.14
Corn, crude, bbls.	lb.	.09¾ @	.10
refined	lb.	.11 @	—
Cottonseed, crude		.08 @	—
Cycline	gal.	.26 @	.34
Fluxrite	lb.	.05 @	.06
Glycerine, C.P. drums	lb.	.26 @	.26½
Linseed, Raw C.L. bbl.	lb.	.09½ @	.10
Moldrite	lb.	.05 @	.06
Palm Lagos	lb.	.08½ @	—
Niger	lb.	.07½ @	—
Vansulol	lb.	.10½ @	—
Peanut, domestic, crude	lb.	.11 @	—
Petrolatum, white	lb.	.08¾ @	.09
amber	lb.	.03¾ @	.04
dark amber	lb.	.03⅝ @	.03½
Pine, steam distilled	lb.	.70 @	—
Rapeseed, refined	gal.	.82 @	.83
Rosin, first rectified	gal.	.70 @	—
second rectified	gal.	.73 @	—
Synthecite	lb.	.06 @	—

Resins and Pitches

Pitch, Burgundy	lb.	.06½ @	.07½
coal tar	gal.	.05½ @	.06
pine	bbl.	9.00 @	10.00
Rosin, grade K	bbl.	11.40 @	—
Pigmentar	gal.	.38 @	.41
Tar Retort	bbl.	15.50 @	16.00
kiln burned	bbl.	16.00 @	16.50

Solvents

Acetone, pure	lb.	.12 @	.14½
Alcohol denatured, No. 1 bbls.	gal.	.37½ @	.44½
Benzol, 90%	gal.	.28 @	—
pure		.29 @	—
Carbon bisulphide	lb.	.05½ @	.06¼
Carbon tetrachloride		.06¾ @	—
Motor gasoline, steel bbls.	gal.	.20 @	—
Naptha, V. M. & P.	gal.	.14 @	—
Turpentine, spirits	gal.	.78 @	.79
wood	gal.	.72 @	.73

Waxes

Beeswax	lb.	.58 @	.60
Carnauba, No. 1	lb.	.57 @	.59
Ceresin, white	lb.	.13 @	.14
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.30 @	—
green	lb.	.30 @	.32

ANTI-OXIDANTS

Age-Rite	lb.	— @	—
Antox	lb.	.81 @	.83
VGB	lb.	.60 @	.66

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.10 @	.15

VULCANIZING INGREDIENTS

Ethyl Chloride, Cyl.	lb.	.34 @	—
" " Drums	lb.	.24 @	—
Sulphur Chloride (drums)	lb.	.03½ @	.06
Sulphur flour			
Superfine, bags	cwt.	2.20 @	2.80
" bbls.	cwt.	2.55 @	3.10
100% pure, refined, bags	cwt.	2.60 @	3.15
bbls.	cwt.	2.95 @	3.50

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Interest in Tire Fabrics Shows Decrease

Tire Plants Show Disinclination to Make Commitments For Third Quarter—Quotations Lowered Half Cent in Quiet Market.

NEW YORK, April 4, 1927—During the middle of March deliveries of tire fabrics were made in fairly large quantities for tire plants were working practically at full capacity. Little new business was booked and quotations showed a downward tendency. There were very few 'filling in' orders placed during the month, for most of the users were covered for the second quarter and there was very little inquiry on third quarter deliveries, it being reported by one large factor that this quarter was still very open.

On a whole, tire fabrics have been quiet in the past fortnight with a disposition to hold off placing orders until after June 1. Quotations on cord fabrics are quoted about ½c. lower than in our last report. Prices will be found in the adjacent column.

Raw Cotton Situation

After the middle of March, when the liquidation which took place earlier in the month had stopped, sentiment became bearish but short selling was by no means aggressive. Surveys showed that there were no signs of selling pressure on the part of Southern holders and that cotton goods prices had been well-maintained despite a less active demand with mills in a strong position owing to the substantial volume of orders on their books.

On Monday, March 21 the final report of the Bureau of Census was issued and it showed that this season's yield would amount to 17,687,607 bales of 506.3 pounds average weight, compared to 16,122,516 bales of 499.5 pounds average weight for 1925-26. Analyzing stocks on hand, A. Norden & Co., figured that the amount of cotton remaining in the United States on March 1 was only 46 per cent of the total supply for the season as against 45 per cent a year ago. At the same time it was determined that the present price of middling upland is about $25 a bale under that quoted last year.

A feature of the market recently has been the increase in cotton exports. During the week ending March 19 American ports shipped to foreign destinations, exclusive of Canada, 290,080 bales, which compared with 160,689 bales exported during the corresponding week last year. Exports so far this season to date now exceed the exports of the whole of last season and the gain up to date this year over last has reached 1,962,175 bales. It seems certain that exports for the entire season will reach close to 10,500,000 bales and may even exceed that total.

Business done during the last week in March was very small in volume reflecting uncertainty as to the future of the market. On a whole cotton trading in the past fortnight has been quiet and confined to narrow price fluctuations. Unsettled weather and lack of buying interest have served to keep trading to a minimum. Another possible decrease in planted acreage, varying from 5 to 10 per cent, has served to hold the market in its present position by indicating the uncertainty of the new crop.

Sheetings

During the past two weeks prices on sheetings have shown a decrease while the market during the week just past was very quiet, though prices were fairly firm according to the advice of a leading commission house to its mill clients.

Ducks

Mills have been doing well in enameling duck during the past few weeks which has been quoted at 30 cents for the single filling in narrow widths up to 34 cents for double filling. A number of cotton duck mills were said to have only scattered lots of single filling to offer in the past ten days, and none of double filling. However, they are reported to be sold ahead on enameling duck in some quarters. Other duck constructions were in demand in only limited quantities, while prices held nominally unchanged.

Current COTTON and FABRIC *Quotations*

COTTON CLOSING PRICES

	High	Low	April 4 Close	March 17 Close
May	14.07	13.98	13.99@14.00	13.79
July	14.28	14.19	14.20@14.21	13.97
Oct.	14.52	14.41	14.42@14.43	14.13
Dec.	14.70	14.59	14.60@14.61	14.29
Jan.	14.71	14.63	14.64@14.65	

TIRE FABRICS

CORD		
Peeler, carded, 23/5/3	lb.	.36½@.37½
Peeler, carded, 23/4/3	lb.	.37½@.38½
Peeler, carded, 13/3/3	lb.	.34 @.34½
Peeler, carded, 15/3/3	lb.	.34½@.35½
Egyptian, carded, 23/5/3	lb.	.44 @.45
Egyptian, combed, 23/5/3	lb.	.48 @.49
CHAFERS		
Carded American, 8 oz.	lb.	.34 @.34½
Carded American, 10 oz.	lb.	.35½@.36½
Carded American, 12 oz.	lb.	.36 @.36½
Carded American, 14 oz.	lb.	.36½@.37
LENO BREAKER		
Carded American, 8¼ oz.	lb.	.35 @.35½
Carded American, 10¼ oz.	lb.	.36½@.37
SQUARE WOVEN		
Carded American, 17¼ oz. 23-11 ply	lb.	.36½@.37½
Carded American, 17¼ oz. 10-5 ply	lb.	.34 @.34½

SHEETINGS

40-inch 2.50-yard	yd.	.11¼@—
40-inch 2.85-yard	yd.	.10¼@—
40-inch 3.15-yard	yd.	.10¾@—
40-inch 3.60-yard	yd.	.09¼@—
40-inch 3.75-yard	yd.	.07⅞@.08
40-inch 4.25-yard	yd.	.06⅞@.07

DUCKS

Belting and Hose	lb.	.20 @.29½
Enameling	lb.	.30 @.34
Sloe Ducks	lb.	.29½@.33½
Single filling	lb.	.12 @.15
Double filling	lb.	.14½@.16

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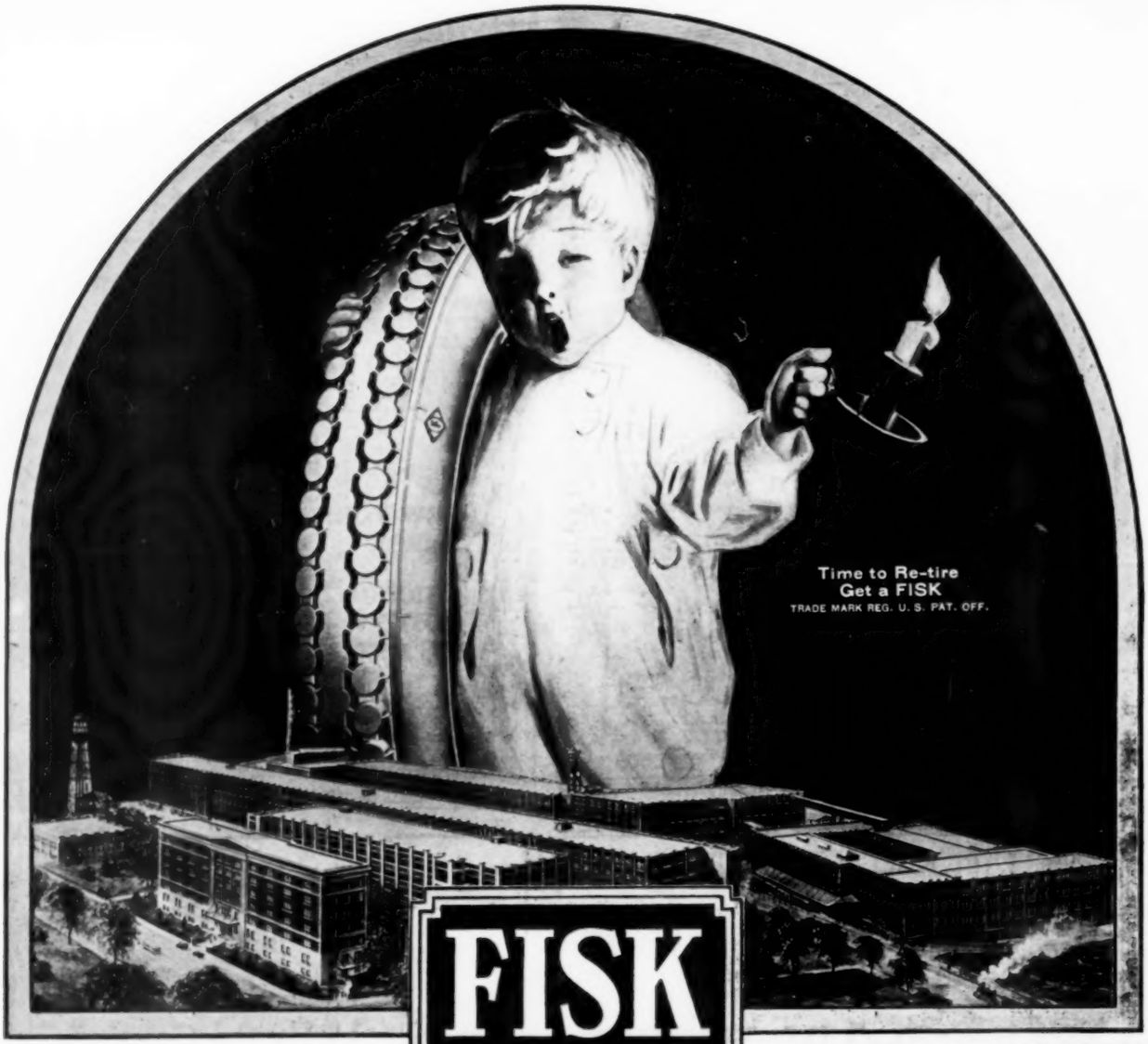

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STATISTICAL SECTION

TIRES & TUBES
CRUDE RUBBER

AUTOMOBILES
GASOLINE

CRUDE rubber prices, as reflected in the daily price tables on the next page, have remained quite steady during the last fortnight. In the United States the spot price has varied only fractionally from the 41-cent level. In London the slight fractional gains beyond 20 pence have proved difficult to maintain.

The official price of ribbed smoked sheets in London in the current restriction quarter had averaged only 19.265 pence up to and including April 4, whereas an average of 21 pence is necessary to prevent the exportable quota from being reduced to 60 per cent on May 1. The price would have to rise to practically 24 pence (about 48½ cents) and stay there for the remaining days of April in order to prevent the cut. It is accordingly apparent that the cut is virtually certain.

London stocks appear to have reached their peak for the time being. During the third week of March they declined 216 tons; in the following week they gained 1,867 only to drop back by 533 tons in the week ending April 2. No new figures are available concerning stocks in the United States. March arrivals are expected to equal if not slightly exceed the consumption so that the Rubber Association stock figures, which become available about the middle of April, may be expected to show a slight increase.

Automobile production in the United States in January and February ran behind the corresponding months of 1926.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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Daily Cotton Prices in New York
Stocks of Crude Rubber in the U. S.
Stocks of Crude Rubber in London
Rubber in Singapore and Penang
United States Tire and Tube Statistics
Automobile Production—U. S. and Canada
Rims Inspected and Passed in the U. S.
United States Consumption of Gasoline
Rubber Exports from Producing Countries
Rubber Imports into Consuming Countries

U. S. Imports and Exports of Crude Rubber.

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1925:							
Jan.	32,898	22,406,756	30.41	1,162	963,593	37.02	31,736
Feb.	24,696	18,532,115	33.50	979	779,406	35.53	23,717
Mar.	33,072	25,146,691	33.94	1,345	1,105,119	36.69	31,727
Apr.	32,506	24,874,562	34.16	1,130	1,009,305	39.86	31,376
May	36,932	30,311,754	36.64	1,203	1,323,445	49.12	35,729
June	31,569	26,855,883	37.98	1,198	1,577,106	58.75	30,371
July	32,455	33,701,723	46.36	1,278	2,132,681	74.52	31,177
Aug.	33,412	39,834,348	53.22	1,131	1,623,258	64.08	32,281
Sept.	26,367	36,686,013	62.11	1,154	1,820,360	70.41	25,213
Oct.	34,651	50,027,338	64.45	1,132	1,989,291	78.48	33,519
Nov.	37,755	56,271,963	66.54	1,605	2,898,930	80.65	36,150
Dec.	40,329	65,055,868	72.02	1,510	2,625,259	77.61	38,819
	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926:							
Jan.	42,404	72,528,151	76.36	2,084	3,747,505	80.28	40,320
Feb.	32,865	58,733,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,234	66.51	40,316
Apr.	34,544	48,742,539	62.99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55.35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,470	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.02	1,437	1,519,870	47.20	35,675
Oct.	29,333	25,300,483	38.50	1,366	1,316,270	43.02	27,967
Nov.	38,925	34,661,631	39.97	1,482	1,320,461	42.00	37,443
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,350
	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927:							
Jan.	43,340	36,753,719	37.99	1,526	1,444,734	42.22	41,814
Feb.	28,338	23,110,257	36.41	2,451	2,277,297	41.47	25,887

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1921	1922	1923	1924	1925	1926	1927
January	5,045	16,938	30,106	29,058	29,638	32,196	31,518
February	5,955	14,767	30,149	25,736	29,761	31,136	30,137
March	9,190	21,408	36,629	28,385	33,498	32,936	
April	13,084	19,294	29,085	27,129	34,139	32,696	
May	16,023	23,246	36,155	25,845	35,322	29,364	
June	16,142	31,713	24,272	22,753	35,822	28,598	
July	18,310	24,522	17,685	23,396	36,053	27,577	
August	23,649	29,361	20,359	28,982	35,909	34,533	
September	16,705	24,410	17,594	31,497	31,691	32,904	
October	16,814	26,881	21,321	31,520	29,047	29,836	
November	14,105	24,950	20,437	27,289	28,853	28,080	
December	15,482	25,070	21,902	27,199	28,748	26,293	
TOTALS	170,504	282,560	305,694	328,769	388,481	366,149	

Figures on Quarterly Basis

Quarter	1921	1922	1923	1924	1925	1926
Jan./Mar.	65,463	127,360	96,776	87,609	95,263	94,301
Apr./Jun.			89,493	75,674	104,099	87,109
Jul./Sept.	105,962	155,067	55,621	83,813	99,493	93,793
Oct./Dec.			63,617	92,656	85,789	83,212
Total	171,425	282,427	305,507	339,752	384,644	358,415

Note: The Rubber Association estimates its monthly rubber consumption figures to be 90% complete. Up until 1925 the quarterly figures were likewise estimated to be 90% complete; beginning with 1925 an estimate of 92% completeness has been used. These estimates have been used in raising the figures in this table to 100%. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
Jan. 22	4,117	1,756	1,508	239	7,620
Jan. 29	6,819	1,080	1,349	197	9,445
Feb. 5	3,187	1,001	1,147	150	5,485
Feb. 12	4,414	327	1,412	753	6,306
Feb. 19	4,284	835	1,209	720	7,048
Feb. 26	5,071	45	1,827	570	7,513
Mar. 5	5,759	2,091	1,536	825	9,711
Mar. 12	6,146	1,352	1,968	198	9,664
Mar. 19	6,417	908	2,026	272	9,623
Mar. 26	5,800	1,014	1,638	493	8,945

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
1925																																
Jan.	—	39⅝	39⅝	—	39	39	39¼	38⅜	38⅝	38⅞	—	37⅞	86½	36⅝	85	85⅝	35⅝	—	34⅞	34⅞	35½	35¼	—	36¼	—	35⅝	35½	35⅝	35	35⅝	86⅝
Feb.	—	35⅝	34⅜	34½	34½	34½	35⅝	—	—	35⅛	—	85⅞	86	—	—	86⅝	36⅝	35⅝	36⅛	36⅛	—	—	—	37⅛	37⅝	37⅞	38⅜	—	—	36
Mar.	—	38⅝	38⅜	38⅜	38⅞	39½	39¾	—	39⅜	40⅜	40¼	39⅜	40⅜	40⅜	40⅜	40⅜	40½	41	41¼	41⅛	41⅝	42½	43¾	42½	43⅜	43⅜	43⅝	43⅝	44⅛	42¾	41
Apr.	41¼	41⅞	41¼	41⅞	46⅞	48⅜	42⅜	43⅛	43⅜	40⅜	40⅜	40⅜	40⅜	44⅜	44⅜	44⅜	44⅜	44⅜	44⅜	44	44⅛	43⅜	43⅜	43⅜	44⅛	44⅜	45⅜	44⅛			43⅜
May	45	45⅝	47¼	47¼	46⅞	48⅜	50⅛	52½	55⅞	59	59	59¼	60⅜	60⅜	60⅜	64¼	64¼	64¼	64¼	64¼	60⅜	61⅞	65	63½	65⅛	69½	65⅝	62⅜			58½
June	69½	72	74⅜	76½	75⅜	75⅜	74	74⅛	73⅜	74⅜	75⅜	74⅜	74⅜	74⅜	74⅜	71⅜	71⅜	72⅜	73⅜	75⅛	76¼	79¼	79¼	85⅛	82½	85⅞	85⅞	85⅞			77¼
July	81⅛	81⅜	85⅝	—	88⅛	88⅛	90½	81¾	94⅜	99⅞	106⅞	110	105⅜	110⅜	110⅞	117	116⅜	118⅜	—	121	117⅞	119	117⅜	112¼	112¼	107⅜	96⅜	93¼	89⅜	93⅜	103⅞
Aug.	94½	—	95½	—	85⅜	86⅜	—	—	71⅜	72⅜	76½	81½	80⅜	77⅜	—	93⅜	78⅜	80½	80¾	83½	82½	—	82½	82½	85¼	85¼	85¼	87½	91½	90	83
Sept.	88¼	87¼	85	88⅜	81¼	—	97½	78¼	80½	83	86⅞	92½	92	93⅜	93⅜	92⅜	92⅜	92⅜	94¼	99	92	93¼	93⅜	90	89	89⅜	91⅜	91½	—	88⅜
Oct.	91¼	91¼	92	94½	98¼	100	100¼	—	99¼	101	—	97½	95½	97	99	99¼	99	107	101¼	102	99	99¼	99¾	99¼	98	99¾	99¾	101⅞	100¼	98
Nov.	—	99¾	—	98⅜	98¼	—	108	109	98¼	99¼	100¼	101¼	104½	105⅞	99¼	90¼	93	86¼	86⅜	110⅜	110½	109	110¾	109	106¼	—	108¼	108⅜	107	91¼	104¾
Dec.	106¾	108½	107¾	107¾	108¼	—	—	—	109½	106	105⅞	105½	—	101	—	—	—	86¼	86¾	—	88¼	90¼	88¾	88¾	—	—	—	91	93	91¼	98½
1926																															
Jan.	—	—	—	87	87¼	85½	86½	87½	87¾	—	88¼	86¾	88¼	85⅜	84⅜	82½	—	75½	75½	75¼	75	72	72⅜	—	68	66½	67	69¾	70½	69	—	79½
Feb.	67	67½	66¼	66⅜	68	69	67	69	65	66	66	65⅜	65⅜	—	—	60⅜	60⅜	60	59	60	—	56	55	55	52	51¾	51	—	—	—	62¾
Mar.	55	58	53	53⅜	53¼	57⅛	56	56	55½	61	60	61⅜	62	60⅜	62	60⅜	61	62	61	61½	61	61⅛	61	60	60	59⅛	60	59⅝	58½	58	59
Apr.	59	—	59	—	58	—	—	56½	—	53	53	51⅜	50⅜	48⅜	48⅜	—	47	47	47½	48½	47¾	49	48	46	46	48	48	48⅜	48	—	51¼
May	48¾	—	50	50¼	49¼	49¾	49¼	49½	—	49	49	49	48½	47¾	47½	47½	47	47	47½	47¾	47¼	46¾	—	46	45	45	45	43	—	—	47¾
June	41⅞	—	41¼	42	41¼	—	41½	42	43	41¾	42	43	43½	43	43	43	43	43	43	44	44	44	43¼	43½	43	42	42	42	—	—	42½
July	42	42	42	42	37	41¼	41½	41½	41⅛	41⅜	42	41⅛	41⅛	40	40	40	40	40	40	40	41½	41½	41½	41½	—	41⅛	41	41	39¾	39	41¼
Aug.	—	38⅜	38½	38½	37	38¼	39	38¼	38¼	37⅜	37⅜	37⅛	37⅛	38½	38½	38½	38¼	38¼	38¼	39	39½	39½	39	39	—	39	39	39½	42½	42½	41
Sept.	40¼	40¼	40¼	—	—	—	40¼	40¼	40	40¼	40¼	40¼	40¼	40½	40½	40½	40½	40½	40½	41	41½	42	42	42	42	42	42	42½	42¾	42½	42½
Oct.	43	43	—	43¼	42¾	42¾	42⅜	42½	42½	42½	—	42⅜	42⅜	42⅜	42⅜	42⅜	42⅜	42⅜	42⅜	42¼	42¼	42⅜	42⅜	42⅜	42½	42½	42½	42½	42⅝	42½	—	42½
Nov.	41¼	—	41	41¼	41¼	41½	41½	41½	41½	41¼	42⅜	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	39	—	38	38	38½	—	38	37¾	37	37	37	38½	38½
Dec.	36¾	37½	37½	37½	—	37	—	37	37	37	37	37½	37½	37½	37¾	37¾	37½	38	38	38¼	38½	38¾	38¾	39	—	39	39	38½	38¾	38¾	—	38¼
1927																																
Jan.	—	—	38½	39	39¼	39	40¾	40½	40¾	40½	40¾	40	40	39¾	38¾	39¾	39¾	39¾	38¾	39	38½	38¾	38¾	—	38¼	38	38	38¾	38¾	38	—	38¾
Feb.	37¾	37¾	37⅜	37½	37½	—	37⅜	37⅜	37⅜	37⅞	37⅞	41¾	41¾	41¾	41¾	41¾	38⅜	38⅜	38¾	38¾	38½	38½	38½	—	39	39	39	39½	—	—	—	—
Mar.	39¾	39¾	40	40¼	41	—	40¾	40¾	40¾	40¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41½	41¼	41¼	41¼	41	41	41	41	41	41
Apr.	41⅞	41⅞	—	41																											
May																															
June																															
July																															
Aug.																															
Sept.																															
Oct.																															
Nov.																															
Dec.																															

Average Spot Closing Prices--Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	*Cents*	*Year*	*Cents*	*Years*	*Cents*
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound since 1922

Months	1922 *Cents*	1923 *Cents*	1924 *Cents*	1925 *Cents*	1926 *Cents*	1927 *Cents*
Jan.	18.82	32.73	25.86	36.71	79.50	38.75
Feb.	16.12	35.14	25.29	36.01	62.25	38.25
Mar.	14.53	34.21	22.83	41.00	59.00	41.04
Apr.	15.99	32.48	22.51	43.64	51.25	
May	15.25	27.39	19.89	58.47	47.75	
June	15.11	26.88	18.81	77.26	42.50	
July	14.67	26.10	22.16	103.16	41.03	
Aug.	13.93	28.84	26.17	82.99	38.50	
Sept.	14.44	28.95	27.56	88.88	41.00	
Oct.	19.78	26.93	31.13	98.01	42.50	
Nov.	23.88	27.14	34.33	104.80	38.50	
Dec.	27.42	26.60	37.88	98.51	38.25	
Average for Year	17.50	29.45	26.20	72.46	48.50	

London Closing Prices of Ribbed Smoked Sheet

(In pence per pound)

Fifth Restriction Year—Second Quarter

Day	*Feb.*	*March*	*April*	*Day*	*Feb.*	*March*	*April*
1	18⅞	19¾	20	16	18⅞	20⅜	
2	18¾	19¾	20	17	19	20⅜	
3	18⅝	19¾	—	18	19¼	20¼	
4	18¾	20	20	19	19⅜	20⅜	
5	18¾	20¼		20	—	—	
6	—	—		21	19¼	20⅜	
7	18⅞	20¼		22	19¼	20⅝	
8	18¾	20⅛		23	19⅜	20⅛	
9	18⅞	20		24	19⅜	20	
10	18⅞	20⅛		25	19½	20	
11	18¾	20¼		26	19½	20⅛	
12	18⅞	20⅜		27	—	—	
13	—	—		28	19⅝	20⅛	
14	19	20¼		29	—	20	
15	19	20¼		30	—	20⅛	
				31	—	20	

(The average price for the period for which daily prices are reported above is approximately 19.625 pence. The British Colonial Secretary has announced that only 60% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26	1926-27
Nov.-Jan.	14.285	14.175	17.9983	46.709	19.265
Feb.-Apr.	16.858	12.917	19.356	28.103	
May-June	14.242	10.974	38.469	21.001	
Aug.-Oct.	14.944	14.632	43.269	20.199	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	*April Cents*	*March*	*Day of Month*	*April*	*March*	*Day of Month*	*April Cents*	*March*
1	14.40	14.85	11		14.20	21		14.40
2	14.35	14.70	12		14.10	22		14.15
3	——	14.65	13		——	23		14.25
4	14.30	14.50	14		14.00	24		14.30
5		14.50	15		14.05	25		14.30
6		——	16		14.05	26		14.40
7		14.50	17		14.00	27		——
8		14.45	18		14.00	28		14.40
9		14.25	19		14.20	29		14.55
10		14.25	20		——	30		14.35
						31		14.45

Average Monthly Price Per Pound

Month	1925 *Cents*	1926 *Cents*	1927 *Cents*	*Month*	1925 *Cents*	1926 *Cents*	1927 *Cents*
Jan.	23.99	20.85	13.42	Aug.	23.72	18.57	
Feb.	24.70	20.60	14.10	Sept.	23.79	17.02	
Mar.	25.64	19.35	14.32	Oct.	21.77	13.14	
Apr.	24.54	19.13		Nov.	20.94	12.86	
May	23.41	18.92		Dec.	20.06	12.68	
June	24.13	18.57		Average for Year	23.45	17.53	
July	24.68	18.71					

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At End of	ON HAND			AFLOAT			ON HAND AND AFLOAT		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	60,870	55,198	76,172	36,759	46,296	45,312	97,629	100,434	121,484
Feb.	54,109	58,035	91,186	41,475	46,935	42,166	95,584	104,970	133,352
Mar.	52,494	61,822		40,577	43,567		93,071	105,389	
Apr.	50,143	55,261		53,465	41,905		103,608	97,166	
May	52,064	64,360		46,846	40,303		98,910	104,663	
June	50,997	60,460		51,202	40,907		102,199	101,367	
July	46,245	64,900		46,003	38,062		92,248	102,962	
Aug.	42,354	60,870		41,254	37,360		83,608	98,230	
Sept.	36,367	62,078		55,151	42,464		91,518	105,542	
Oct.	34,085	64,989		51,098	52,930		85,183	117,919	
Nov.	34,885	69,385		42,692	47,311		86,577	116,696	
Dec.	51,215	72,520		48,208	52,020		99,423	124,540	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At End of:	1920	1921	1922	1923	1924	1925	1926
January	19,300	56,573	67,252	73,498	57,460	27,172	9,994
February	18,329	59,439	67,623	70,483	56,732	23,425	10,004
March	18,969	63,913	66,670	63,438	55,647	18,104	13,750
April	20,072	68,759	68,637	58,770	54,559	12,949	18,951
May	20,921	70,403	70,146	54,439	51,615	5,895	20,896
June	22,517	69,408	71,597	51,050	51,115	5,318	23,894
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727
August	30,674	73,211	72,112	48,427	49,700	4,619	30,764
September	35,504	72,175	70,977	54,523	44,011	5,453	35,077
October	41,743	69,229	68,536	58,891	37,523	5,086	42,141
November	45,550	70,786	68,548	60,074	33,593	3,869	44,057
December	50,652	69,792	72,299	60,246	29,488	5,697	48,921

At End of Recent Weeks

1926	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
August	27,972	29,313	29,678	30,159	——
September	30,764	32,011	33,249	34,587	——
October	36,065	37,226	39,650	41,080	42,141
November	43,045	43,299	44,553	43,859	——
December	44,395	46,349	47,324	48,382	——
1927					
January	48,948	50,756	52,484	53,662	54,786
February	55,740	56,939	56,962	58,659	——
March	59,945	61,516	61,300	63,167	——
April	62,634				

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1925	1926	1927	End of	1925	1926	1927
Jan.	15,925	15,726	25,440	July	15,894	23,101	
Feb.	17,320	13,653	26,766	Aug.	17,251	23,362	
Mar.	17,261	18,389		Sept.	16,526	25,997	
Apr.	15,368	16,328		Oct.	15,346	26,614	
May	15,804	16,967		Nov.	19,788	25,486	
June	15,884	19,416		Dec.	18,840	26,443	

Rims Inspected and Passed in U. S.

(Tire & Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1925	25,997,849	66.8
1924	21,863,720	19.7	1926	24,199,613	78.8
1926			1927		
July	2,123,368	84.8	January	1,489,078	77.0
August	2,378,850	82.3	February	1,753,224	84.4
September	2,365,518	80.7	March		
October	1,828,539	76.9	April		
November	1,210,472	77.0	May		
December	1,096,429	76.7	June		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1924	1925	1926	1927
January	11,918,000	14,386,000	17,582,000	17,888,000
February	9,626,000	13,210,000	15,814,000	18,240,000
March	10,961,000	14,890,000	19,302,000	
April	14,583,000	19,013,000	20,848,000	
May	15,889,000	20,459,000	24,213,000	
June	16,421,000	20,724,000	23,803,000	
July	18,610,000	22,879,000	24,752,000	
August	19,825,000	22,323,000	26,912,000	
September	16,871,000	20,177,000	22,929,000	
October	18,029,000	19,826,000	23,973,000	
November	16,607,000	18,024,000	20,618,000	
December	15,663,000	17,954,000	21,419,000	
TOTAL	185,003,000	223,865,000	262,165,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	43,932	45,259	51,633	60,845	61,237
Shipments	39,987	45,204	50,120	59,262	59,002
Inventory[2]	6,132	5,772	7,427	8,142	10,456

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	4,740	4,587	4,965	4,013	2,974	4,932	7,949	9,947	10,432
Feb.	4,908	4,865		3,924	3,436		8,928	11,164	
Mar.	5,276	5,456		4,657	4,561		9,510	12,004	
Apr.	5,341	5,346		5,498	4,980		9,088	12,461	
May	5,467	5,023		5,954	5,211		8,611	12,343	
June	5,418	5,422		6,737	5,724		7,243	11,968	
July	5,587	4,950		6,298	6,337		6,421	10,592	
Aug.	5,607	5,872		4,760	6,744		7,261	9,732	
Sept.	5,007	5,706		4,569	6,040		7,681	9,318	
Oct.	4,505	5,103		5,580	4,544		6,670	9,917	
Nov.	4,229	4,324		3,671	3,733		6,955	10,297	
Dec.	4,760	4,683		3,601	4,718		8,142	10,456	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	50,850	60,116	70,706	82,614	76,618
Shipments	49,673	59,072	68,016	81,004	71,591
Inventory[2]	7,643	8,425	11,052	11,313	16,200

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	6,343	6,809	5,337	5,576	3,723	6,016	11,570	14,361	15,585
Feb.	6,339	6,825		4,971	3,736		13,023	17,090	
Mar.	7,000	7,030		5,711	4,987		14,236	19,131	
Apr.	6,851	6,554		6,704	5,051		13,618	20,674	
May	6,846	6,149		8,040	6,304		12,501	21,141	
June	6,942	6,171		9,032	6,898		10,409	20,243	
July	7,544	5,729		9,140	8,569		8,635	17,267	
Aug.	7,618	7,424		6,923	9,579		9,271	15,462	
Sept.	7,254	7,590		6,665	7,762		9,950	15,312	
Oct.	6,612	6,208		7,845	5,474		8,726	15,929	
Nov.	6,266	4,852		5,406	4,045		9,491	16,604	
Dec.	6,999	5,277		4,991	5,463		11,313	16,200	

(1) Rubber Association of America figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	Passenger Cars			Trucks		
	Total	United States	Canada	Total	United States	Canada
1920	1,883,158	1,799,522	83,636	322,039	311,531	10,508
1921	1,514,000	1,452,902	61,098	147,550	142,402	5,148
1922	2,397,827	2,302,923	94,904	251,434	244,285	7,149
1923	3,719,164	3,589,936	129,228	378,288	361,078	17,210
1924	3,262,764	3,144,999	117,765	378,106	360,625	17,481
1925	3,817,639	3,678,328	139,311	498,019	475,941	22,078
1926						
January	284,703	272,922	11,781	33,461	29,763	3,698
February	334,524	319,763	14,761	41,685	37,608	4,077
March	399,105	381,116	17,989	49,233	44,848	4,385
April	401,836	383,907	17,929	53,887	50,314	3,573
May	394,569	373,140	21,429	51,343	47,838	3,505
June	358,360	339,542	18,818	47,043	44,110	2,933
July	328,816	315,863	12,953	41,847	39,592	2,255
August	393,040	380,258	12,782	47,907	45,404	2,503
September	363,537	350,913	12,624	51,299	46,428	4,871
October	300,142	289,547	10,595	46,965	42,890	4,075
November	226,278	219,504	6,774	39,410	36,356	3,054
December	143,413	137,361	6,052	30,002	28,302	1,700
TOTAL	3,928,323	3,766,336	161,487	534,082	493,453	40,629
1927						
January	208,718	196,973	11,745	40,800	37,169	3,631
February	275,156	260,330	14,826	41,858	38,029	3,829
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						

Exports of Crude Rubber from Principal Producing Countries

(Figures in Long Tons)

	BRITISH MALAYA[1]								DUTCH EAST INDIES[2]							
	Gross Exports	*Gross Exports minus Imports*	*Imports*	*Ceylon[3]*	*India & Burma[3]*	*Sarawak[4]*	*British North Borneo[3]*	*Siam[4]*	*Java & Madura*	*Sumatra E. Coast*	*Other D.E.I.*	*Indo-China[3]*	*Amazon Valley[5]*	*All Other[6]*	*World Total[7]*
1923	252,016	70,482	181,584	37,112	6,416	5,705	4,237	1,718	32,938	48,402	43,422	5,606	19,127	7,856	404,123
1924	259,706	108,524	151,182	37,351	7,697	6,699	4,621	2,962	42,446	53,483	80,347	6,688	22,906	9,065	425,447
1925	316,825	158,022	158,803	45,684	10,082	8,413	5,424	5,394	46,643	62,678	119,271	7,881	24,079	13,797	508,149
1926:															
Jan.	30,452	10,237	20,215	4,058	1,273	416	472	289	4,397	6,277	8,081	915	1,697	1,805	49,895
Feb.	30,440	8,306	22,134	4,941	725	488	450	253	4,474	5,734	6,801	554	2,169	1,978	50,701
Mar.	35,012	14,800	20,212	5,708	1,113	792	561	418	4,865	5,612	11,880	573	2,395	1,899	56,028
Apr.	23,727	10,565	13,162	3,484	590	679	374	293	4,522	4,598	6,208	410	1,778	1,529	37,627
May	31,231	10,604	20,627	3,600	691	927	410	279	4,742	5,293	8,606	502	2,144	1,464	49,285
June	30,624	11,764	18,860	3,906	452	779	512	275	5,440	6,111	9,844	549	1,367	1,279	49,374
July	28,824	15,280	13,544	4,800	938	911	420*	439	4,929	5,522	12,864	1,521	1,246	1,148	48,282*
Aug.	34,625	13,595	21,030	5,246	521	890	420*	316	4,418	3,472	10,349	378	1,411	1,097	49,548*
Sept.	35,913	13,972	21,941	6,027	652	888	420*	457	4,326	6,757	10,971	681	1,463	822	55,405*
Oct.	39,367	15,203	24,164	6,026	635	805	420*	385	4,193	6,988	11,513	661	1,616	1,023	58,429*
Nov.	34,302	12,201	22,101	4,687	1,111	685	420*	285	4,060	5,746	8,998	718	1,500*	1,000*	51,311*
Dec.	36,811	14,716	22,095	6,361	1,177	895	420*	338	5,025	7,106	12,333	790	1,500*	1,000*	59,040*
	391,328	151,243	240,085	58,844	9,878	9,155	5,299*	4,027	55,391	69,216	118,448	8,252	20,286*	16,044*	614,925*
1927:															
Jan.	34,946	14,995	19,951	6,697	922				4,184	6,705	10,541	941			
Feb.	27,528	11,607	15,921									675			
Mar.															
Apr.															
May															
June															
July															
Aug.															
Sept.															
Oct.															
Nov.															
Dec.															

(1) Malayan net exports cannot be taken as production since imported rubber is largely wet native rubber which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, and 3,263 in 1926. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, and about 20 tons in 1926. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, and about 60 tons in 1926. In 1926, 196 tons of latex sprayed rubber and 125 tons of ficus rubber were exported from Java and Madura. (6) Calculated from official import statistics of principal consuming countries; viz., United States, United Kingdom, France, Germany, Italy, Belgium, and Netherlands. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States	*United Kingdom*	*France* (abd)	*Germany*	*Canada* (ac)	*Japan* (ac)	*Italy*	*Russia* (ce)	*Australia* (cf)	*Belgium* (d)	*Netherlands* (abed)	*Sweden* (abc)	*Norway* (abc)	*Denmark* (abd)
1919	236,977	42,671	19,951	5,584	8,770	10,688	9,894	75	733	3,995	2,771	2,022	437	673
1920	248,762	56,844	15,868	11,890	11,912	6,015	6,123	62	1,040	3,840	5,510	1,567	241	479
1921	179,678	42,087	16,981	21,920	8,248	22,981	3,906	165	554	1,705	1,022	813	178	251
1922	296,267	11,724	27,644	27,546	9,366	16,449	6,430	2,453	2,649	172	-3,807	1,248	321	87
1923	300,372	12,700	31,067	18,519	13,299	17,181	8,489	4,506	1,631	2,184	792	1,391	448	354
1924	317,747	-11,550	34,488	22,727	14,420	19,612	8,764	824	3,127	2,688	-807	1,781	669	473
1925	381,815	4,061	36,911	33,937	19,825	12,743	11,412	7,088	4,217	2,930	875	1,690	701	440
1925:														
January	31,736	-284	2,147	4,303	1,432	797	552	333	192	331	109	164	64	16
February	23,717	-2,492	3,529	3,690	1,278	658	908	1,000	338	275	88	136	145	37
March	31,727	-3,396	3,924	2,784	2,349	689	1,463	1,083	357	373	56	183	77	71
April	31,376	-2,961	3,069	3,574	1,397	719	817	535	314	97	181	149	47	33
May	35,729	-8,650	3,223	3,834	1,532	863	1,060	1,999	385	228	47	126	47	16
June	30,371	619	2,387	3,239	1,681	2,095	1,506	59	378	329	120	97	43	74
August	32,281	3,825	1,109	2,942	1,582	786	650	16	341	176	28	114	45	24
July	31,177	2,204	1,827	2,606	1,613	813	631	85	297	169	76	119	53	35
September	25,213	5,369	4,633	2,667	1,202	936	939	234	429	283	136	102	54	20
October	33,519	1,203	3,039	2,325	1,799	1,060	914	21	243	255	60	159	38	38
November	36,150	2,466	4,654	1,260	1,712	2,140	1,157	190	512	236	-12	219	55	52
December	38,819	6,158	3,870	713	2,248	1,187	815	1,533	431	178	-14	122	33	35
1926:														
January	40,345	6,886	3,170	703	2,188	892	760	332	358	76	154	123	46	51
February	31,435	3,114	3,513	1,113	1,881	741	1,041	643	432	143	89	171	82	94
March	40,316	8,907	4,790	1,342	2,079	864	1,037	832	469	129	227	218	81	55
Apr.	33,416	8,275	4,834	1,781	1,624	1,868	865	402	431	71	93	204	27	23
May	28,705	6,773	2,937	1,848	1,239	1,010	705	200	386	186	241	110	24	47
June	23,795	5,894	2,327	1,655	1,188	1,465	1,070	983	546	269	214	178	20	34
July	34,266	6,768	2,603	2,202	1,552	1,447	800	132	586	295	480	195	34	27
Aug.	26,081	7,327	2,819	2,110	1,888	1,284	796	655	1,159	303	596	199	52	55
Sept.	35,675	8,843	2,900	2,029	1,355	1,922	819	472	1,125	283	430	159	43	27
Oct.	28,110	8,082	2,962	2,423	1,865	2,396		585	889	301	2	210	63	43
Nov.	37,673	9,247	3,194	3,007	1,548			568		194	-18	179		50
Dec.	35,850	4,749			1,846			725			157	184		
	395,667	84,865			20,253			6,529			2,665	2,125		

a—Including gutta percha. b—Including balata. c—Reexports not deducted. d—Believed to include scrap and reclaimed rubber. e—Russian statistics are exports from United Kingdom only to Russia. f—Australian annual statistics including 1924 are exports to Australia from Malaya, Ceylon, Dutch East Indies and United Kingdom; monthly figures and total for 1925 are exports from Malaya, Ceylon, and Java only. -Minus sign, reexports in excess of imports. *All statistics from original official trade returns.*

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REVIEW DESK

THE WHITE CONQUEST OF THE JUNGLE. What Rubber has Done for the Federated Malay States and the Dutch Indies. By H. L. Russell, Dean of the College of Agriculture, University of Wisconsin. Published in the February issue of the *American Bankers' Association Journal.*

In this short article Dean Russell tells of a trip to the Federated Malay States. "The jungle is gone," he writes. "The smooth-barked forest trees in riotous confusion interlaced with the huge strands of climbers have given way to serried ranks of rubber trees planted in geometrical precision."

He compares former conditions, when the mountain slopes were covered with jungle growths, showing what the white man can accomplish in the tropics when he is able to control and direct the cheap brawn of the Orient. With the enormous demand created for rubber by the expansion of the motor industry, the story of rubber is an Aladdin's tale, the author concludes. His treatment of the story is almost as interesting; it is to be regretted that the article is not longer, for it only touches the history of the plantation industry.

* * * *

SELENIUM IN RUBBER COMPOUNDS. Reprint of Paper by C. R. Boggs and E. M. Follansbee. Issued by Simplex Wire & Cable Co., Boston, Mass.

The paper printed in this pamphlet on "Selenium in Rubber Compounds" was first delivered jointly by the authors at a meeting of the London and District Section of the Institution of the Rubber Industry during November of last year. The authors are with the Simplex Wire & Cable Co.

The pamphlet is written from a distinctly technical point of view, and in this respect is comprehensive and exhaustive. The authors show that selenium acts as a vulcanizing agent to produce soft vulcanized rubber. When selenium and sulphur are used together to produce soft vulcanized rubber, the selenium acts as an efficient accelerator as well as a vulcanizing agent. Tire tread compounds vulcanized with selenium and sulphur in the presence of organic accelerators show abnormally high rigidity and abrasion resistance. The result is obtained with a variety of filling materials and accelerators. The other physical properties are practically not affected. It is suggested that the accelerating action produced by the selenium is due to selenium sulphide and that the abnormal physical results are due to the selenium and sulphur together adding to the rubber molecule.

* * * *

BARNSTEAD WATER-DISTILLING APPARATUS. A Handbook. Barnstead Still and Sterilizer Co., Inc., Boston, Mass.

This is a comprehensive illustrated catalog describing the various uses of a water-distilling apparatus manufactured by this company. The apparatus is automatic and according to the catalog is being variously used in laboratories, colleges, hospitals and offices. The company also manufactures steam-heated stills with a capacity of from one to one hundred gallons per hour and home stills with a capacity of one or two quarts an hour.

The Barnstead apparatus guarantees the sterilization of water, which may in turn be safely used for diluting alcohol and pharmaceutical preparations generally. It is pointed out in the handbook that no iron or rust can accumulate in the tanks, and that the water stills may be easily cleaned.

Among the rubber manufacturers using this apparatus are the Goodyear Tire & Rubber Company, Kelly-Springfield Tire Company, and Hood Rubber Company.

* * * *

GATES VULCO NEWS. House Organ of Gates Rubber Co., Denver, Colo. Vol. 1, No. 5. 4 pages.

This issue of *Vulco News*, which is published in the interests of Gates distributors and to aid in better merchandizing of Gates products, contains a large number of items describing new products, how to display goods, selling hints, news of factory activities and short news items on activities of Gates dealers. It is attractively printed on good stock, well-illustrated and undoubtedly can be read to great advantage by all Gates distributors.

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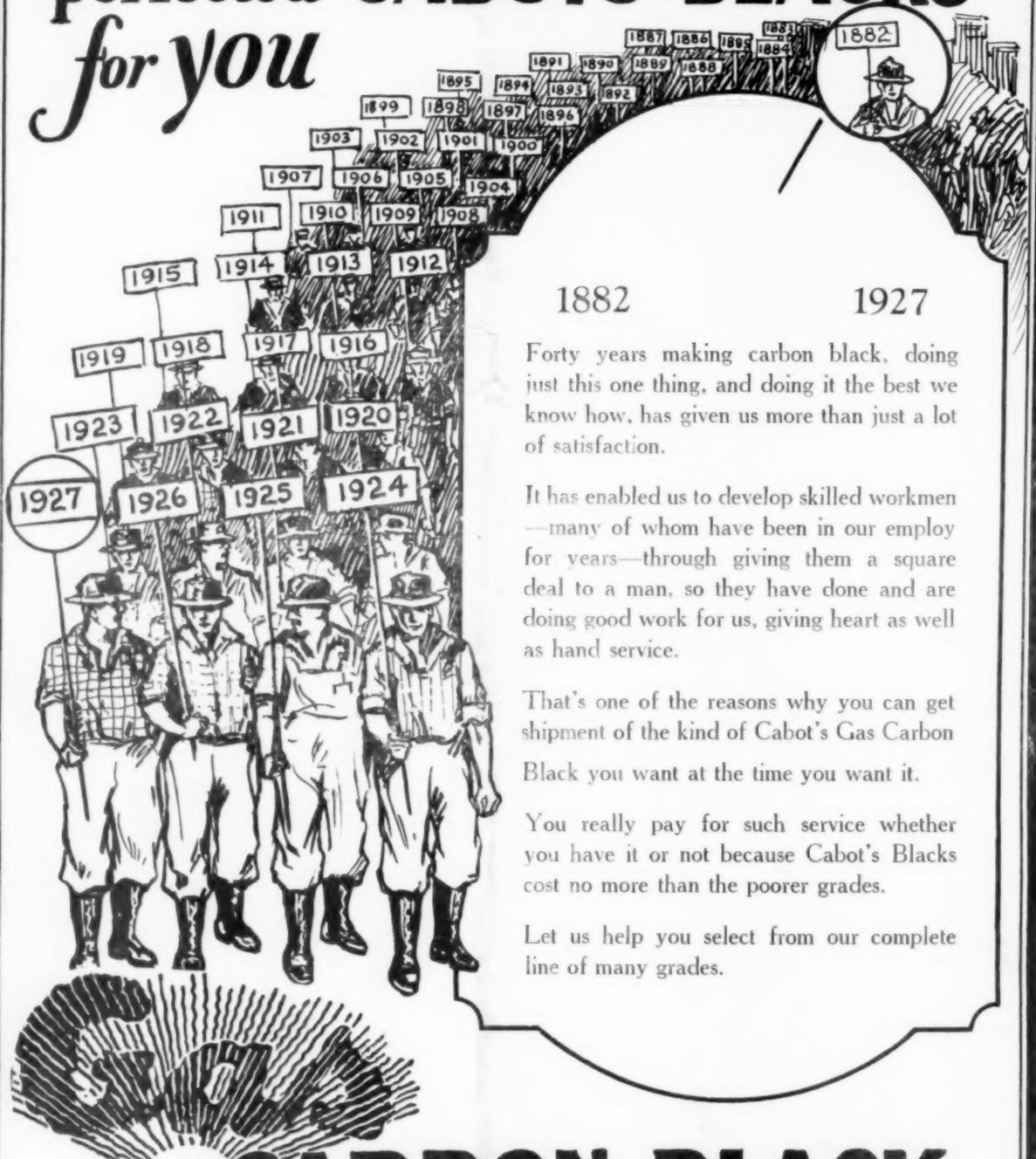

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